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Original Articles

ANATOMY OF THE INGUINAL REGION.*

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This paper is limited to the region of the inguinal canal and enters into a description of such portions of the various structures as are directly included in this territory.

The observations are based on some fifty dissections. They have been compared with the descriptions in Toldt, Spalteholz, Morris, Gray, Deaver and Zukerkandel and found to be somewhat at variance with them. These textbooks were selected as representative of the anatomies usually referred to. A few monographs on the subject have been consulted with the same results. It would carry the paper to too great lengths to discuss these differences in connection with the findings here presented. This lack of uniformity of description has led to the publication of the present paper, in which are included such original drawings as are necessary to illustrate the text.

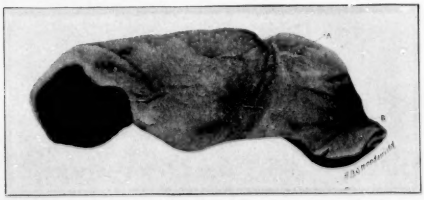

Fig. 1.—Abdominal wall face of a cast of the inner face of the inguinal region after removal of the peritoneal coat. (About 3/5 natural size.)

The old nomenclature has been adhered to, although the terms often convey false ideas because of the anatomic misconceptions at the time they were adopted.

The structures which enter into the region under consideration are peritoneum, extraperitoneal fatty tissue, three muscles, four fascias and the so-called conjoined tendon.

The peritoneum had lost all evidence of the processus vaginalis in the adult subjects. Three full-term fetuses were dissected, in two of which it was widely patulous, in the third closed. Judging from statistics of inguinal hernia, it is safe to say that the processus vaginalis of the peritoneum closes in the very large majority of persons during the first four years of life.

The extraperitoneal fatty tissue is continued into the inguinal canal at all ages. It is a most important structure in its relationship to the inguinal canal. Surrounding the cord loosely attached to it, this tissue affords an easy passageway between the abdominal cavity and the scrotum, with but the thin layer of peritoneum acting as a barrier to a potentially open route. The large blood vessels and the spermatic cord are surrounded by this tissue in their course within the abdomen. In their immediate neighborhood the fatty tissue is thickened by bundles of rather dense connective tissue, which serves as a support. In the median direction from the internal abdominal opening it can be separated into three distinct layers; one passes posterior to the bladder, the other two anterior to it. These three layers encase the bladder in a fatty envelope of triangular outline, the base below and the apex above. In the fetus the hypogastric arteries and in the adult the remains of these arteries mark the lateral borders of this triangle. Lateral to this triangle the fatty tissue can not be divided into separate layers. Separation from the abdominal wall can be readily accomplished in this region except in the line of union of the iliac and transversalis fascias (Fig. 4, J). Immediately surrounding the deep epigastric arteries and lateral to them are a number of dense connective tissue bundles which are

Fig. 2.—Pelvic wall face of cast, showing: A, Hesselbach's ligament and deep epigastric vessels; B, Superior ligament of the bladder; C, spermatic vessels; D, vas deferens. (About 3/5 natural size.)

developed in the fatty tissue and which extend from the inner margin of the internal abdominal opening to the outer end of the semi-lunar fold of Douglas. The fatty tissue is closely connected with the outer-lying transversalis fascia in the route of these bundles, and together they give the appearance of a ligament which is known as Hesselbach's ligament (Fig. 3, B). This structure plays a most important part in rendering the inner end of the inguinal canal patulous during increased intra-abdominal tension. The resistance offered by it, in conjunction with the deep epigastric vessels, is well shown in Figures 1 and 2, reproduced from a cast made by taking an impression of the abdominal surface of the inguinal region with the peritoneum removed. The best quality of dental wax, made soft by heat, was tightly pressed against the region of the inguinal canal. The deep epigastric vessels and Hesselbach's ligament stand out well from the wall under

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this pressure and make a depression in the wax (Fig. 1, A). The portion of the cast median to the depression (A), that is, in the direction toward B, corresponds with that area of the abdominal wall formed chiefly by the conjoined tendon. The portion of the cast lateral to the depression corresponds to the wall between the internal abdominal ring and the anterior superior spine of the ilium. This latter area is muscular. These two planes are seen to be anterior to Hesselbach's ligament, which stands out from the wall a centimeter or more when the wall is subjected to pressure. There is not much discrepancy between the outer and inner plane in the normal individual, but when the muscle area, which forms the wall represented by the outer plane, weakens through disease or age this discrepancy becomes marked. This difference in the two planes readily explains how hernias form, the bowel slipping anterior to Hesselbach's ligament and down the inguinal canal. Figure 2 represents the under side of the cast. The vas deferens (D) and spermatic vessels (C) are easily traced. The indenture in the cast between these two structures is made by the brim of the true pelvis.

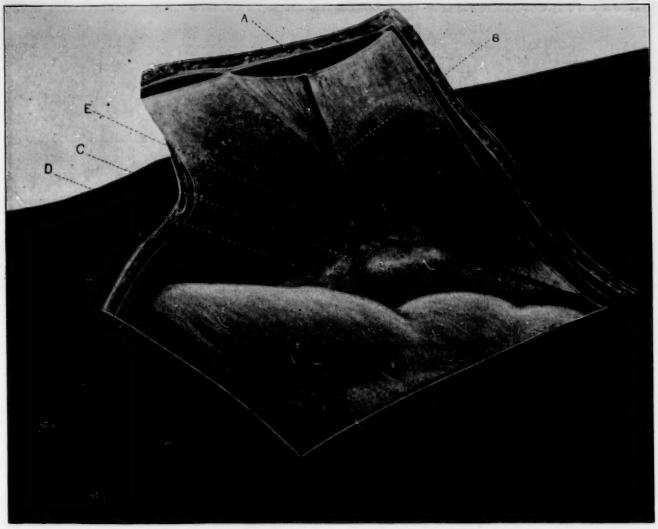

Fig. 3.—Dissection of the inner aspect of the inguinal region after removal of the peritoneum, showing: A, Deep epigastric vessels; B, Hesselbach's ligament; C, vas deferens; D, spermatic vessels; E, internal abdominal opening.

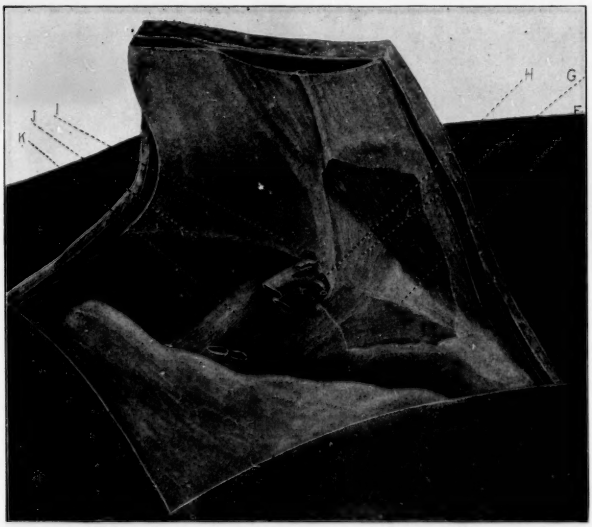

Fig. 4.—Dissection of the inner aspect of the inguinal region after removal of the fatty tissue, and portions of the iliac vessels and transversalis fascia, showing: F, Fibers out of the deep crural arch passing medianward; G, fibrous bundles which come out of the true pelvis and pass on to the abdominal wall; H, femoral opening; I, opening of the inguinal canal in the fascia transversalis; J, line of union of the iliac and the transversalic fascias; K, Cooper's ligament.

The inguinal canal has an oblique course through the abdominal wall from within outward, passing medianward and downward. The fatty tissue passes into and through the canal in an almost straight line from the lateral border of its inner end. From the median border it passes into the canal sharply flexed, giving to the median edge of the internal abdominal opening a falciform appearance. The internal abdominal opening of the inguinal canal, which is situated in this fatty tissue, is shown in Figure 3, E. It is found just above the junction of the anterior abdominal wall and the floor of the false pelvis.

The transversalis fascia is shown in Figure 4; from it a

window has been cut internal to the large vessels to show the outer-lying structures of that area. This fascia is not of uniform thickness, being quite thin in the region under the transversalis muscle, but thick enough in the region caudad of the arching lower fibers of that muscle to offer material support to the abdominal wall. Behind the rectus it is again thin and hard to distinguish from the fatty tissue. The transversalis fascia unites with the iliac fascia just internal to the origin of the transversalis muscle. It leaves the iliac fascia lateral to the iliac vessels and arches over them to the ilio-pectineal line median to the vessels. The intramuscular fascias between the transversalis muscle and internal oblique and between the internal and external obliques join the transversalis fascia in this arch to form the deep crural arch (Fig. 7, E). The transversalis fascia in this plate has been removed from the muscle and cut off along the edge of the arch to allow a view of other structures. Figure 4 gives the internal view of the arch. A number of dense fibers are developed in the deep crural arch which pass medianward across and internal to the lower portion of the conjoined tendon. These serve to hold the lower portion of the tendon in line with the abdominal wall. The transversalis fascia forms the second layer covering the spermatic cord. The description of the manner in which the fatty tissue enters the inguinal canal is applicable to this fascia.

External to the pelvic and iliac fascias and extending on to the abdominal wall to become

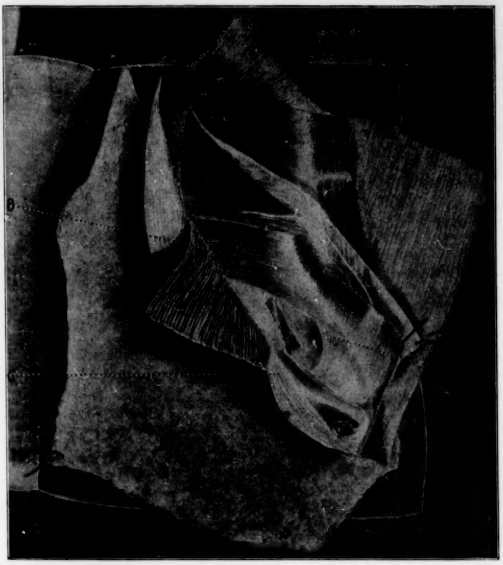

Fig. 5.—Dissection of right inguinal region showing: A, Fibers coming out of the pelvis in this subject constituting the whole of the so-called conjoined tendon; B, transversalis muscle; C, cremasteric muscle and fascia from the internal oblique.

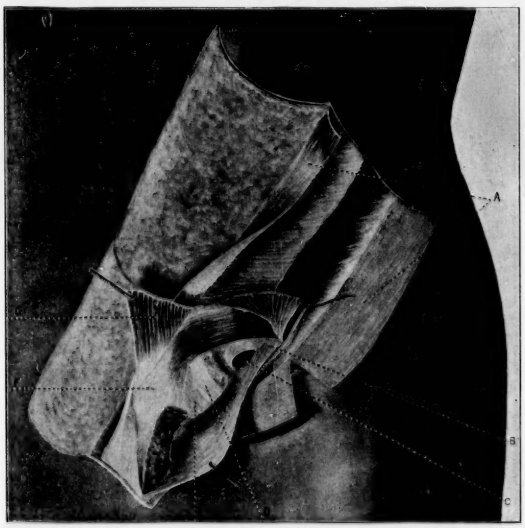

Fig. 6.—Dissection of left inguinal region, showing: A, External oblique muscle; B, cremasteric muscle from transversalis; C, internal opening of the inguinal canal through the transversalis fascia; D, transversalis fascia; E, fibers out of the pelvis which pass into the so-called conjoined tendon; F, aponeurosis of the transversalis muscle; G, internal oblique.

a part of the structure known as the conjoined tendon are a series of dense connective tissue fibers, quite ligamentous in appearance (Fig. 4, K, G). The lateral half of this structure (K), lying chiefly under and lateral to the iliac vessels, is known as Cooper's ligament. The fibers are lost below (caudad) under the femoral sheath posterior to the vessels as they pass into the thigh. The median half of this ligamentous structure is found beneath the pelvic fascia caudad of the ilio-pectineal line. It passes out of the pelvis over the ilio-pectineal line and on to the abdominal wall median to the iliac vessels (Fig. 4, G). In certain persons this structure constitutes the whole of the conjoined tendon, and in all more or less of the fibers enter it. Figure 5, A, represents the appearance of the area when the conjoined tendon is wholly formed by this structure. The median edge of the femoral opening is bordered by its lateral fibers (Fig. 4, H). In conjunction with the deep crural arch these cause constriction of the neck of a femoral hernia. In Figure 4 there is seen a triangular area lying between these ligamentous fibers (G), the deep crural arch (F) and the rectus muscle. This area is usually formed by the aponeurosis of the transversalis muscle, helping to form the conjoined tendon. Between G and Hesselbach's ligament the space is strengthened by the transversalis fascia. The median or lowermost fibers of

this structure course along the ilio-pectineal line to meet, behind the symphysis pubis, similar fibers from the other side.

The transversalis muscle takes origin from the continuation of the iliac fascia, caudad of the line of union of this fascia with the transversalis fascia. The extent of origin of the muscle from the iliac fascia varies, not only in different subjects, but also in the same subject on the two sides (Figs. 5 and 6). This may be stated to be under or within the outer half to one-third of Poupart's ligament. The lowermost fibers of this muscle take an inward and downward course over the internal abdominal ring to find insertion into the ilio-pectineal line for a variable extent. This insertion varies from a fraction of an inch to an inch and more. In some subjects, however, the muscle passes to the body of the pubis or even only to the linea alba, finding no bony insertion at all (Fig. 5). That portion of the muscle finding insertion into the ilio-pectineal line is usually described as forming with the internal oblique the conjoined tendon. This is never true. The transversalis (Fig. 6, F) becomes quite aponeurotic just before its insertion into the ilio-pectineal line and lies anterior to the ligamentous structure (Fig. 6, E). In Figure 6 the anatomic arrangement of the conjoined tendon is quite normal. The transversalis fascia is indicated by D, a window being cut out of it to show the relation of the deep epigastric vessels to this area. The ligamentous structure is indicated by E and the transversalis muscle by F. Figure 5 shows the other extreme of the relationship of the structures forming the conjoined tendon. It is here made up of only the ligamentous structure. Figure 7 shows an anatomic condition in which the transversalis muscle forms a distinct, compact aponeurotic lamina and finds insertion into the whole of the ilio-pectineal line median to the iliac vessels. Very few of the ligamentous fibers entered the conjoined tendon in this subject, but passed almost wholly behind the insertion of the rectus to unite with similar fibers from the opposite side.

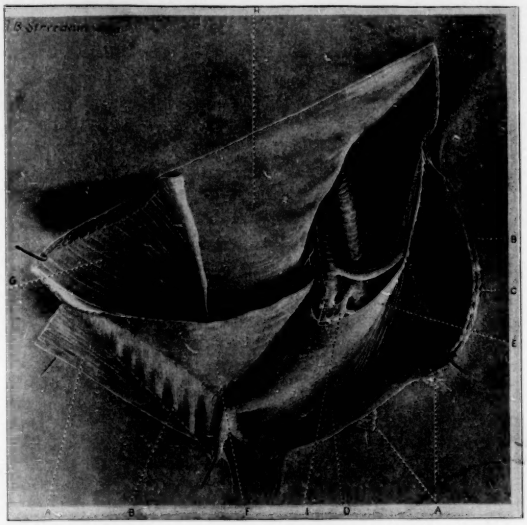

Fig. 7.—Further dissection of the left inguinal region, showing: A, External oblique; B, internal oblique; C, transversalis; D, cremasteric muscle and fascia; E, deep crural arch; F, aponeurosis of the transversalis; G, rectus muscle; H, peritoneum covering the intestines.

Fig. 8.—Further dissection of the left inguinal region with greater portion of cremasteric fascia, removed, showing: I, Femoral sheath; K, fascia lata; L, Gimbernat's ligament; M, cremasteric fascia; N, external oblique.

The cremaster muscle consists at times of a few of the lowest fibers of the transversalis, having been carried into the scrotum by the descending testis (Fig. 6, B). Its fibers returning upward are inserted into the ilio-pectineal line just lateral to the insertion of the transversalis proper. The musculus interfovealaris consists of a few bundles derived from the posterior surface of the transversalis muscle and is inserted into the transversalis fascia just median to the internal abdominal opening. It is not constant.

The lower fibers of the internal oblique take origin from the iliac fascia parallel to and caudad of that of the transversalis muscle. The extent of this origin may be said

to be under the outer half of Poupart's ligament. The course of the fibers is from without inward and downward, but not quite so caudad in direction as that taken by the transversalis muscle. The internal oblique is, as a rule, quite closely connected with Poupart's ligament through its anterior fascia. Likewise some of the fibers of the internal oblique in many subjects become aponeurotic and enter Poupart's ligament near its middle. This secures a close union of the two muscles. The lowest fibers of the muscle are inserted into the pubic bone below and anterior to the transversalis muscle. These arch over the cord in front of the internal abdominal opening. The variableness of this feature has been repeatedly mentioned by different anatomists. From the lower edge of the internal oblique its fascias pass downward, cover the spermatic cord, surround the cremaster muscle and find insertion into the ilio-pectineal line. This fascia constitutes the cremasteric fascia and helps to form the deep crural arch anterior to the iliac vessels (Fig. 7, D, and Fig. 8, M).

The features to be mentioned in connection with the external oblique chiefly concern Poupart's-Gimbernat's ligament. Gimbernat's ligament (Fig. 8, L) is a most variable structure, consisting of those fibers of Poupart's ligament which turn posterior and medianward to be inserted into the ilio-pectineal line parallel with and external to the insertion of the cremaster fascia. These fibers are closely attached to the fascia lata of the thigh. Its inner border lies parallel with the deep crural arch, external to it. The intercolumnar fibers are derived from the lowest fibers of the external iliac aponeurosis. They cross the external abdominal opening at its apex and spread out in a fan-shape manner. Some of these aponeurotic fibers can be traced into the fascia lata below Poupart's ligament and are inserted into the ilio-pectineal line under Gimbernat's ligament. They lie within the falciform process of the fascia lata lateral to the cribriform fascia. The external abdominal opening in the external oblique is covered in by the peri-aponeurosis (deep fascia of the abdomen). This peri-aponeurosis is pushed forward as a covering of the cord, and the opening which the cord apparently makes is known as the external abdominal ring. This ring is strengthened by a number of dense fibers, which encircle its upper and outer border.

The ilio-inguinal nerve lies anterior to the cord as it passes out of the abdominal wall and the genito-crural posterior or internal to it. This latter nerve enters the canal median to the internal abdominal opening and passes through the canal anterior to the cremasteric fascia and posterior to the cord.

SUMMARY.

The internal abdominal opening is located in the extraperitoneal fatty tissue.

Hesselbach's ligament is formed by fibrous bundles which connect the outer end of the semi-lunar fold of Douglas with the inner margin of the internal abdominal opening. These bundles are developed chiefly in the extraperitoneal fatty tissue. Along the route of these bundles there exists between the fatty tissue and the transversalis fascia a close union. During intra-abdominal pressure, Hesselbach's ligament, due to its resistance, helps to increase the size of the internal abdominal opening.

In the inguinal area the internal surface of the abdominal wall is divided into two planes by Hesselbach's ligament. Normally, the plane lateral to this ligament is only slightly anterior to the plane median to the ligament. When the muscles of the lateral plane are weakened by disease or are enfeebled through advanced age intra-abdominal tension greatly exaggerates this difference. As the internal abdominal opening is situated at the junction of these two planes, the greater the difference the more patulous the opening and the greater the possibility of escape of a viscus through the opening.

The transversalis fascia does not join Poupart's ligament at any point.

The deep crural arch is formed by the junction of the transversalis and cremasteric fascias in the arch in front of the external iliac vessels as they pass into the thigh. The free (posterior) edge of Gimbernat's ligament is just external to and parallel with the deep crural arch.

The fibrous bundles which pass out of the pelvis into the so-called conjoined tendon give to the abdominal wall its chief strength internal (posterior) to the inguinal canal. The aponeurosis of the transversalis muscle strengthens the wall just internal (posterior) to the external abdominal ring.

The base of the so-called conjoined tendon, the lateral margin of which is formed by the fibrous bundles which enter the tendon from out of the pelvis, is the constricting agent in femoral hernia. A Spanish surgeon, Gimbernat, attributed this agency to the structure which has since been given his name.

The so-called conjoined tendon was in no instance formed by a union of fibers from the internal oblique and transversalis muscles in the subjects dissected. Judging from the usual anatomic arrangement this union seems quite impossible.

The external abdominal opening is situated between the dividing fibers of the aponeurosis of the external oblique muscle. The external abdominal ring is situated in the periaponeurosis which covers the external abdominal opening.

FATIGUE.*

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It is a striking principle of biology that the activity of living substance tends to inhibit its further activity. Carried to a moderate degree, this inhibition leads to the self-preservation of the living substance—to an extreme degree, to its self-destruction. The characteristics of this inhibition, its accompanying phenomena within the organism and the causes that lead to it form the subject of the present lecture. Fatigue is a comprehensive term, comprising, in its simple form, the functional state of the organism and its constituent parts after activity. Lying on the border zone where the physiologic and the pathologic meet, it reaches far into both and obscures the division lines between them. When present in slight or moderate degree, it limits achievement, but is easily recovered from; when excessive or an accompaniment of disease, it forms a serious condition, which, if in man, the medical practitioner must meet and combat.

Fatigue is a universal biologic phenomenon. The activity, however slight, of living substance, wherever found, reveals its beginnings. While it has been studied chiefly in the muscular and nervous tissues, it has been pointed out elsewhere, and our recognition of its signs

* Address delivered before the Harvey Society, New York, Feb. 3, 1906.

is certain of being extended by future study. The chief sign is, in a word, depression—depression of irritability, wherein a given stimulus calls forth a response of less intensity than before; and depression of the total capacity for work, whatever the intensity of the stimulus; its early stages may show, however, a temporary heightened irritability and an apparent, but not real, heightened capacity for work. There are many other signs, recognizable in individual cases.

Owing to the unequalled opportunity of applying to the study of muscular activity the exact methods of the physicist and the chemist, the phenomena of muscular fatigue are known more exactly than those of other tissues. Leaving aside for the present the chemical as causative of the physical phenomena, we may consider the latter first—and here the pioneer was Helmholtz,[1] to whom more than to any other in its long history scientific medicine is indebted for exactness in method. Let us assume a voluntary muscle, of either a cold-blooded or a warm-blooded animal, either a lower animal or man, either within the body with the circulation and nervous supply intact or (though this has not yet actually been proved for man) removed from the body. Let such a muscle be stimulated by a series of single artificial stimuli of equal intensity, regularly repeated and applied either directly to the muscle itself or indirectly through the mediation of the nerve, and let the muscle

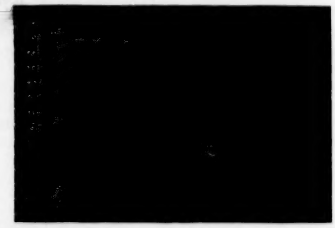

Fig. 1.—Record of fatigue of the frog's gastrocnemius muscle. The numbers signify contractions.

perform mechanical work, such as the lifting of a certain load. We may then observe the following phenomena (Fig. 1): The degree of shortening of the muscle during each contraction increases for a considerable time; hence the height to which the load is lifted or the amount of work that is performed is gradually increased. Later the reverse occurs—the shortening decreases, reaches its original amount, falls below it, and disappears slowly and very gradually, the muscle becoming incapable of performing further work unless a stronger stimulus or a lighter load be employed, or a period of rest be allowed to intervene, or the chemical composition of the muscle be artificially altered in a suitable manner. The irritability of the muscle at first increases and later decreases; its total capacity for performing work begins to decrease at the beginning of the experiment.

At the same time that the spatial changes are going on the time relations of the muscular action are also changing. Here, strangely enough, the muscle of the cold-blooded animal behaves differently from that of the warm-blooded one. In the former, almost from the first, the duration of each twitch begins to lengthen, the whole physiologic process slows, and this reaches large proportions even while the irritability is increasing. The slowing continues for a long time, and only when signs of exhaustion begin to appear does each twitch require a somewhat shortened time for its performance, although the duration is still far greater than at first. The slowing in activity is shared by both contraction and relaxation, but chiefly by the latter, although the degree in which each participates in the phenomenon differs in the muscles of different species. By reason of its existence, by reason of the continuance of the muscle in a contracted state, the organ is less capable of performing work, and, unless the successive stimulations occur at rather long intervals, it usually passes sooner or later into a pronounced and persistent contracture, from which it gives feeble twitches.

In warm-blooded animals, man included, there appears to be no analogous slowing of either contraction or relaxation, while in the later stages of the experiment, when the lifting power is feeble, there may even be a quickening. I have been able to show that this marked difference between the two groups of animals is independent of temperature; it persists even when the cold-blooded muscle is warmed to mammalian temperature, and the warm-blooded muscle is cooled, and it constitutes a real physiologic difference.[2] The cold-blooded or poikilothermal animal, which lacks a nervous mechanism that regulates its body temperature, represents the more primitive type, from which the homothermal condition has become evolved. It is not surprising that in the course of this evolution the muscle has dispensed with a process which distinctly hampers its activity, and has thus become a much more efficient machine.

Here a word of caution may be necessary. Do not jump to the conclusion, because of what I have said, that the voluntary contraction of a man's muscle, when fatigued, is fully as rapid as or more rapid than when in a fresh condition. We know from experience that this is not so, that we work more slowly when weary. I have been dealing so far with single contractions, not with voluntary contractions. The latter are always tetani, composed of single contractions fused together. The duration of the single contraction of the human muscle, which can be obtained only by an artificial stimulus, is not lengthened in fatigue; the voluntary contraction may be slowed. More than twenty years ago the Italian physiologist, Mosso,[3] devised the important apparatus called the ergograph, and by its means began the long series of studies of voluntary contractions in man, which has made the Turin school famous, and has immeasurably extended our knowledge of fatigue in living human beings. Treves,[4] one of Mosso's own pupils, Franz,[5] Hough,[6] Storey[7] and others have shown that the original form of the ergograph is defective, and have so perfected the instrument that it bids fair to become an important clinical aid in diagnosis. An ergographic record usually consists of a series of curves of momentary contractions, at regular intervals, of certain finger muscles, either one or more, a known weight being lifted or a spring of known tension being stretched. Such a record exhibits in fatigue a gradual diminution

1. Helmholtz: Müller's Arch. f. Anat., Phys. u. wiss. Med., 1850, p. 324; 1852, p. 212.

2. Lee: Arch. f. d. ges. Phys., 1905, vol. cx, p. 400.

3. Mosso: Arch. f. Anat. u. Phys., Phys. Abth., 1890, p. 89; Arch. ital. de biol., 1890, vol. xiii, p. 123; "La fatica," Milano, 1891; English translation: "Fatigue," New York, 1904.

4. Treves: Arch. ital. de biol., 1898, vol. xxix, p. 157, vol. xxx, p. 1; Arch. f. d. ges. Phys., 1899, vol. lxxviii, p. 163; 1901, vol. lxxxviii, p. 7.

5. Franz: Amer. Jour. of Phys., 1900, vol. iv, p. 348.

6. Hough: Amer. Jour. of Phys., 1901, vol. v, p. 240.

7. Storey: Amer. Jour. of Phys., 1903, vol. viii, p. 355.

of the lifting power of the muscle, the rate and regularity of the diminution varying with individuals. The single contractions of human muscle, induced by artificial stimuli, directly applied, may be recorded by the same instrument.

In the course of the experiments that I have quoted, it may justly be said that fatigue begins with the first contraction—the muscle is less capable of work by reason of this contraction. It is convenient to set apart the late stages as the period of exhaustion, although the beginning of such a period is not marked by distinctive physical phenomena. If at any stage the muscle be irrigated by a stream of fresh blood, by Ringer's solution, or even by an indifferent isotonic solution of sodium chlorid, or, what is less efficient, although in some degree effective, if it be allowed simply to rest, the physiologic pendulum tends to swing back, the irritability and the total capacity for work increase, and physiologically the organ is pushed back to an earlier stage of the fatigue process; in other words, the muscle is in some degree restored.

The term, muscular fatigue, requires a word of explanation, for it has been shown by various investigators, including Waller,[8] Abelous,[9] Santesson,[10] and Joteyko,[11] that when muscle in fatigue ceases to respond to stimuli sent to it through its nerve, it is still capable of contracting on direct stimulation. Their inference from this fact is that the motor nerve endings within the muscle are the first part of the mechanism to succumb. This inference is probably justified; the nerve endings are probably more susceptible to fatigue than the protoplasm of the muscle cells, and hence the muscle protoplasm itself within the organism probably never reaches the stage of profound exhaustion.

In the study of fatigue the nervous system has occupied a curious position. For while it has long been thought that the brain and spinal cord are, of all parts of the organism, the most susceptible to fatigue, it has been known for more than twenty years that the nerve fiber is extremely resistant. Although Bernstein,[12] in 1877, concluded that the nerve is less easily fatigued than the muscle, the Russian physiologist, Wedenskii,[13] was the first to suggest, in 1884, that the nerve may possibly perform its functions altogether without fatigue. Wedenskii stimulated the nerve at a distant point and blocked the passage of the nervous impulses before they reached the muscle by keeping an intermediate portion of the nerve in a constant state of anelectrotonus by means of a polarizing current. At the end of six hours he found the nerve still as active as at first. Maschek[14] obtained a similar result at the end of twelve hours, and, moreover, confirmed the general discovery by substituting ether for a polarizing current. Brodie and Halliburton[15] blocked the impulses by cooling the splanchnic, Bowditch[16] and Durig[17] by using curare with a motor nerve, Szana[18] by atropin with the cardiac vagus, Lambert[19] also by atropin with the secretory fibers of the chorda tympani, while Wedenskii,[13] Hering,[20] Maschek,[14] Edes[21] and Waller[8] studied the current of action during long periods of activity.

These investigators, working on both cold-blooded and warm-blooded animals, agree in maintaining the extreme resistance of the nerve to fatigue, their experiments continuing in some cases for fifteen hours. Objections have been brought against some of them, notably those in which the persistence of the negative variation is the indicator of indefatigability, it having been shown that negative variation persists even after other evidences of vital action have ceased; nevertheless, the main principle is well supported. Garten[22] seems, however, to have demonstrated some measure of fatigue in the non-medullated fibers of the olfactory nerve of the fish: by means of continued stimulation, the current of action, as measured by the capillary electrometer, becomes diminished in extent; after a pause it increases. Fröhlich,[23] too, believes that he has demonstrated fatigue in a frog's nerve when in partial asphyxiation. On the chemical side no decisive experimental evidence has been brought forward. While Funke[24] and Ranke[25] find acid in nerves after strong general tetanus, there is no proof that it is formed *in situ*. Waller's[26] inference of the production of carbon dioxid in tetanized nerves from the similarity of their electrical phenomena to those of nerves artificially placed under the influence of carbon dioxid seems hardly justified from such slight evidence. Our conclusion must, therefore, be, and with this we shall find general agreement, that, while nerve is probably not indefatigable, it is extremely resistant to fatigue in comparison with other peripheral tissues, and that, although nerve protoplasm is not an exception to the general biologic law according to which katabolic changes occur during activity, such changes here present are either minute or, more probably, are at once compensated for by adequate anabolism.

But the demonstrated resistance of nerve fibers could not easily shake the firm belief of physiologists in the extreme susceptibility to fatigue of the central portion of the nervous system. It has long gone without dispute that in prolonged activity the brain and spinal cord succumb first, and thus the exhaustion of the peripheral tissues is prevented. The nerve center has been compared to the fuse of an electric circuit, the burning out of which protects the muscle from grievous injury. By most upholders of the neuron theory central fatigue has been referred to the bodies of the nerve cells, in which Hodge,[27] Vas,[28] Mann,[29] Lugaro,[30] Eve,[31] and others have demonstrated histologic changes after activity. According to most of these observers, moderate activity

8. Waller: Brit. Med. Jour., 1885, vol. ii, p. 135; 1886, vol. ii, p. 101; Brain, 1891, vol. xiv, p. 179; Jour. of Phys., 1896, vol. xix, p. 1.
9. Abelous: Arch. de physiol., 1893, p. 437.
10. Santesson: Skand. Arch. f. Phys., 1895, vol. v, p. 394.
11. Joteyko: "Fatigue," Richet's Dict. de Phys., Paris, 1904.
12. Bernstein: Arch. f. d. ges. Physiol., 1877, vol. xv, p. 289.
13. Wedenskii Centbl. f. d. med. Wiss., 1884, vol. xxii, p. 65.
14. Maschek: Sitzungsb. der Wien. Akad. Math.-Naturwiss. Cl., 1887, vol. xcv, No. 3, p. 109.
15. Brodie and Halliburton: Jour. of Physiol., 1902, vol. xxviii, p. 181.
16. Bowditch: Jour. of Phys., 1885, vol. vi, p. 133.
17. Durig: Centbl. f. Phys., 1901, vol. xv, p. 751.
18. Szana: Arch. f. Anat. u. Phys., Phys. Abth., 1891, p. 315.
19. Lambert: Compt. rend. de la soc. de biol., 1894, p. 511; "La résistance des nerfs à la fatigue," Paris, 1894.
20. Hering: Sitzungsb. d. Wien. Akad. Math.-Naturwiss. Cl., 1884, vol. lxxxix, No. 3, p. 137.
21. Edes: Jour. of Phys., 1892, vol. xiii, p. 431.
22. Garten: Beiträge zur Phys. der markiosen Nervend," Jena, 1903.
23. Fröhlich: Zeits. f. allg. Phys., 1904, vol. iii, p. 468.
24. Funke: Ber. Sächs. Akad., 1859, p. 161; Müller's Arch. f. Anat., Phys. u. wiss. Med., 1859, p. 835.
25. Ranke: "Tetanus," Leipzig, 1865; Centrlb. f. d. med. Wiss., 1868, vol. vi, p. 769; "Die Lebensbedingungen der Nerven," Leipzig, 1868.
26. Waller: Lectures on Physiology; "On Animal Electricity," London and New York, 1897; Phil. Trans. of the Roy. Soc., B, 1897, vol. clxxxviii, p. 64.
27. Hodge: Amer. Jour. of Psych., 1888, vol. i, p. 479; 1889, vol. ii, p. 376. Jour. of Morphol., 1892, vol. vii, p. 95.
28. Vas: Arch. f. mik. Anat., 1892, vol. xl, p. 375.
29. Mann: Jour. of Anat. and Phys., 1894, vol. xxix, p. 100.
30. Lugaro: "Lo Sperimentale," Sez. biol., 1895, vol. xlix, p. 159.
31. Eve: Jour. of Phys., 1896, vol. xx, p. 334.

is accompanied by an increase in the bulk of both cytoplasm and nucleus, excessive activity by a decrease in bulk and the appearance of vacuoles in both, and a loss of the substance of the Nissl bodies. While these histologic changes after excessive activity have generally been interpreted as significant of fatigue, there does not exist general agreement as to their mode of origin.

Professor Sherrington,[32] a strenuous adherent of the neuron theory, a clear thinker and one of the ablest and most careful experimenters, whose investigations in recent years have widely extended our knowledge of the mode of action of the nervous system, doubts the inferences that have been drawn from the histologic observations and denies central fatigue to the bodies of the neurons. He ascribes great physiologic importance to the structure—if it can be called a structure—that is situated at the point where one neuron comes into functional relation with the next in the series, this structure being the synapse. The synapse is the surface of contact of the two neurons and is potentially a membrane.

One of Sherrington's experiments is as follows: Given a certain center within the spinal cord, which can be reached by several afferent tracts, and a common efferent tract to a given muscle, he stimulates one of the afferent tracts and records the reflex contractions of the muscle. In the course of time the motor response gives evidence of fatigue. He then turns to another afferent tract and stimulates it. The motor response now appears as strong as at first. Where is located the fatigue from the first stimulation? Not in the nerve fibers, says Sherrington, for they are practically incapable of fatigue; not in the muscle or the body of the motor neuron, for they are common to the two stimulations. Hence it must be at the synapse between the first afferent tract and the motor neuron. Sherrington likens the synaptic membrane to the motor end-plate, the former constituting the safety fuse within the central mechanism, the latter playing a similar rôle within the muscle; while of the two the synapse is the more susceptible.

Other experiments, however, indicate that there is less justification than has commonly been supposed for the idea that the central nervous system fatigues before the muscular system and lead us to suspect that the reverse is true. Woodworth,[33] for example, finds no perceptible difference in the rate of fatigue when one gastrocnemius is stimulated directly at the same time that the other is stimulated either through the medulla or through a sensory nerve, thus indicating that in such an experiment the nerve center contributes no appreciable amount of fatigue. Mlle. Joteyko,[11] of Brussels, destroys the brain of a frog, thus rendering the animal a reflex machine, and exposes both sciatic nerves. On stimulating nerve A, she obtains direct contractions of its gastrocnemius muscle (A) and reflex contractions of the gastrocnemius (B) of the opposite side. She then blocks the passage of the impulses in nerve B by means of either a continuous polarizing current or ether, and continues to stimulate nerve A. When its muscle is exhausted the block is removed from the opposite nerve, and the muscle of that side responds nearly as well as at first to the reflex stimulations. The reflex centers thus remain active long after fatigue has placed the muscle *hors de combat*. Joteyko concludes that, compared with the terminal organs, the reflex mechanism of the spinal cord is practically indefatigable.

If this conclusion be true, why may not the same be said of the brain centers? The common belief in the susceptibility of the brain to fatigue is based largely on the presence of sensations of fatigue. With such sensations as a daily experience we are all familiar. They are the psychologic concomitants of physiologic processes; and, since we know that the brain is the seat of the former, it is only natural to believe that the physiologic processes occur there also. We feel tired, and we infer that our brain is tired. For long a controversy has raged regarding the origin of the feeling of effort that accompanies muscular work. Is it central? Does the consciousness of the motor discharge precede actual movement? Does the sense of effort decrease as we continue to labor? In recent years we have learned much regarding the nervous relations of muscle, and the existence of the well-developed muscle sense has been established. Sensory end-organs have become recognized in muscles and tendons, and afferent fibers in muscle nerves; the muscles undoubtedly keep the brain informed of their general condition and of the intensity of their contractions. Along with this advance of our knowledge, it has become generally recognized with Wundt, James, Münsterberg and Baldwin that the feeling of the amount of effort required to make muscles contract is dependent on impulses reaching the psychic centers from the muscles, tendons and joints. The feeling of effort is of peripheral origin. The same is probably largely true of the feeling of fatigue. We are distinctly conscious of the fatigue of our muscles; their tone is diminished; their unusual tension gives us a feeling that they are heavy; it seems more difficult to make them respond to our will, and their response is often painful. Moreover, we are aware that our limbs are swollen, that blood vessels are dilated, and that lymph has accumulated in the intercellular spaces. These are but a few of the sensations. Other tissues add their share of stimuli, many of them obscure and difficult of analysis and location. The result of the flood of these impulses pouring into the brain is a large complex of sensations, which we call the feeling of fatigue. Experiment also appears to justify the peripheral location of the influences that lead to our feeling. Mosso,[3] by means of his ingenious instrument, the ponometer, demonstrates that during a series of voluntary muscular contractions resulting in fatigue the nervous effort to contract gradually increases; in other words, that the curve of nervous effort is the reverse of the curve of muscular performance. Evidence seemingly contradictory to the theory of the peripheral origin of fatigue sensations was contributed by Mosso,[3] Lombard[34] and Waller,[5] and for a time had wide acceptance. These investigators claim to have found that when a set of muscles, such as the flexors of the finger, stimulated by volition and lifting a given weight, became incapable of further voluntary contraction, they still responded readily to electrical stimuli applied directly to the muscles themselves. This supposed phenomenon, widely quoted, and at first thought decisive, has been examined critically by

32. Sherrington: "The Spinal Cord," Schäfer's Text-book of Physiology, vol. ii, p. 831, New York, 1900; Proc. of the Brit. Assoc. for Adv. of Sci., 1904, Ergebnisse d. Phys., 1905, vol. iv, p. 797; Jour. of Phys., 1906, vol. xxxiv, p. 1.

33. Woodworth: N. Y. Univ. Bull. of the Med. Sci., 1901, vol. i, p. 133.

34. Lombard: Arch. Ital. de biol., 1890, vol xiii, p. 371; Amer. Jour. of Psych., 1890, vol. iii, p. 24.

Kraepelin,[35] G. E. Müller,[36] Henri,[37] R. Müller,[38] Hough,[6] Woodworth,[23] Storey[7] and Joteyko,[11] and the validity of its proof has been discredited. R. Müller shows, for example, that the muscles that were stimulated volitionally and those that were stimulated electrically were in reality not the same, the former being the interossei, the latter the flexors of the finger. Storey has repeated the work with an improved form of ergograph and with the abductor indicis alone, and clearly demonstrates the appearance of peripheral but not central fatigue. In view of these results and others, I am inclined to the belief that when we perform continued muscular work, our muscular system fatigues before our central nervous system. Moreover, the same results make it probable that the brain and the spinal cord are, like the nerve fiber, resistant, and they throw a certain measure of doubt on all supposed proofs of central fatigue.

With the general problem in this somewhat uncertain state, what can we say of mental fatigue? That it is a reality can not, of course, be denied. It is characterized pre-eminently by a weakening of the powers of attention and the reproductive phase of memory, and the psychophysical laboratories have shown us in innumerable ways how it manifests itself. To explain it on physiologic principles is not altogether possible in the present state of research. Our present theory interprets it as largely peripheral in origin, and Mosso's[3] school has demonstrated, though by imperfect methods, that intense mental work, long continued, such as in the oral examination of many students, diminishes the power of the muscles to respond to direct stimulation, the locus of the fatigue in this case being largely the muscles, as Mosso admits. But to what extent so-called mental fatigue is of peripheral origin we can speak only with caution. We can not deny fatigue to psychic centers, but the intimate relations of central and peripheral fatigue are much in need of exact experimental study.

It is customary to seek the causes of the physical phenomena of fatigue in the chemical changes undergone by the active living substance. Unfortunately, we know too little of these chemical changes. It has been pointed out by von Noorden[39] and Levene,[40] in their illuminating lectures before this Society, that, while the final products of protoplasmic activity are well known, we are sadly ignorant of the intermediate steps between income and outgo. In all tissues during activity substances of value to the organism are broken down and substances of little or no value are formed. When men began to speculate, in the light of the scientific chemistry of the nineteenth century, concerning the causes of fatigue, it was perceived that they might be of two kinds: the loss of valuable material essential to activity and the accumulation of waste products. Naturally the discussion centered on muscle, since many endeavors were being made to seek the source of muscular energy.

Without entering in detail into the interesting history of these endeavors, which are not yet ended, it is sufficient to say that it is now generally recognized that, under ordinary circumstances, the chief source of muscular energy is carbohydrate. Weiss,[41] a pupil of the Viennese physiologist, Brücke, definitely proved in 1871 that a marked diminution of glycogen accompanies muscular activity, and since then many others have demonstrated the same fact in a variety of ways. We might then expect muscular fatigue to be associated with loss of carbohydrate. So far as I am aware, but one research bearing directly on this subject has been made, namely, that of Harrold[42] and myself, performed several years ago and still unpublished in detail. We allowed cats to fast for several days and, during the latter portion of the period, administered hypodermically considerable doses of phlorhizin, which removes carbohydrate from the body. At the end of an adequate period, when, as the experiments of others have shown, the tissues were practically freed from this substance, the animals exhibited great muscular weakness. They were then killed and contraction records were made by selected muscles, artificially stimulated. It was found that under the influence of the drug the muscles were capable of making only from one-fifth to one-half of the number of contractions of which a normal muscle is capable. We proved that this diminution in working power was not due to a direct specific action of the drug on the muscle tissue. The result may, therefore, be explained in one or both of two ways: either by the loss of carbohydrate or by the accumulation of pathologic acids, which are now known to be formed both during fasting and under the influence of phlorhizin. That the former, however, was largely responsible for the fatigue seems probable from our further experiment, namely, that the administration of a quantity of dextrose to a phlorhizinised, and thus thoroughly fatigued, animal was followed within a few hours by a considerable return of muscular power. Our results are well supplemented by those of Mosso and Paoletti,[43] Harley,[44] Frey,[45] Schumburg,[46] and Hellsten,[47] all of whom working with the ergograph on human beings have observed an increase of working power and a diminution of fatigue after the ingestion of sugar.

A condition similar to that of our experiment is met constantly in disease. The physical weakness of fevers, of diabetes mellitus, and of many other pathologic states, in which a deranged metabolism exhausts the muscle cells of their proper store of available nutritive material, a physical weakness which is, physiologically, fatigue, is doubtless due in part to the lack of energy-yielding carbohydrate. Concerning a possible relation of the loss of other substances to fatigue, our present knowledge permits us to say nothing.

Ranke[25] was the first to investigate, from the standpoint of fatigue, the physiologic action of the products of protoplasmic activity. More than forty years ago he studied the action on frog's muscle of the supposed products of muscular action, namely, lactic acid, kreatin, kreatinin, sugar and carbon dioxid. He found that of all these substances only kreatin and lactic acid markedly depress muscular action, as measured by the strength of the induced current necessary to stimulate and also by the height to which the muscle is able to lift a given

35. Kraepelin: "Ueber die Beeinflussung einfacher psychischer Vorgänge durch einige Arzneimittel." Jena, 1892.
36. Müller, G. E.: Zeitsch. f. Psych. u. Phys. d. Sinnesorgane, 1893, vol. iv, p. 122.
37. Henri: Annal. Psych., 1899, vol. v.
38. Müller, R.: Wundt's Philosoph. Studien, 1901, vol. xvii, p. 1.
39. v. Noorden: THE JOURNAL A. M. A., 1905, vol. xlv, p. 1287.
40. Levene: THE JOURNAL A. M. A., 1906, vol. xlvi, pp. 774 and 866.
41. Weiss: Sitzungsb. d. Wien. Akad. Math.-Naturwiss. Cl., 1871, vol. lxiv, No. 2, p. 284.
42. Lee and Harrold: Amer. Jour. of Phys., 1900, vol. iv, p. ix.
43. U. Mosso and Paolettl: Arch. ital. de biol., 1894, vol. xxi, p. 293.
44. Harley: Jour. of Phys., 1894, vol. xvi, p. 97.
45. Frey: Mitth. aus klinik. u. med. Inst. d. Schweiz. Annales suisses des sci. med., 1896, vol. iv, p. 1.
46. Schumburg: Deutsch. milit. Zeits., 1896, vol. xxv, p. 337.
47. Hellsten: Skand. Arch. f. Phys., 1904, vol. xvi, p. 139.

load. He therefore designated these two substances as fatigue substances. Carbon dioxid was found to be slightly depressant, but not sufficiently so to be regarded as playing a distinctly fatiguing action. Both lactic acid and kreatin were found to augment nervous activity, and carbon dioxid slightly to depress it. Later Ranke rejected kreatin as a fatigue substance and accepted acid potassium phosphate. Little experimentation in this subject has been done since Ranke's time; but, partly from his results and partly from other considerations, it is now customary to recognize three distinct metabolic products as fatiguing, namely, sarcolactic acid, mono-potassium phosphate (KH_2PO_4) and carbon dioxid, all of which are acid in reaction. The action of these substances on the muscular and the nervous systems has never been fully investigated. My own experiments on muscle, which are not yet completed, have already yielded certain positive results. From the ready recognition of the phenomena of fatigue in frogs, I have worked so far with them only, but there is no reason to doubt that the results are equally applicable to mammals. I shall, however, extend the work to the latter. My method is to inject one gastrocnemius muscle with physiologic salt solution and the opposite gastrocnemius with similar solution containing a given quantity of the substance which is to be investigated. After a certain time the muscles are excised and stimulated at regular intervals, and comparative fatigue records of the two are made. In this manner I have studied the physiologic action on excised muscle of the three recognized fatigue substances.

Fig. 2.—Record of fatigue of companion gastrocnemius muscles of the frog, one normal, the other under the influence of sarcolactic acid. The longer, or, in the later contractions, the lower curves, are those of the poisoned muscle. Every fiftieth contraction is recorded.

Fig. 3.—Record of fatigue of companion gastrocnemius muscles of the frog, one normal, the other under the influence of mono-potassium phosphate. The longer, or, in the later contractions, the lower curves, are those of the poisoned muscle. Every fiftieth contraction is recorded.

Under the influence of a minute quantity of free sarcolactic acid the frog's gastrocnemius, regularly stimulated, presents a striking series of contractions (Fig. 2). The first contraction curve is usually higher and longer than that of the normal muscle. In successive curves this increased height is maintained for a certain time, but later gives place to the normal height and then to one still lower. From the first curve onward the length rapidly increases in proportion to the normal length until the increase has become very marked; later it slightly decreases. The curves show that in the poisoned muscle there is at first increased and then decreased lifting power, increased and then decreased duration of action in comparison with the unpoisoned muscle. At first sight the effect might be interpreted as due to a beneficial action of the acid. But such an interpretation is a superficial one. More careful observation shows that the fatigue series of the poisoned muscle is like that of the unpoisoned one, if the early contractions of the latter be left out of account. The first contraction curve of the poisoned muscle is not unlike the fiftieth or the seventy-fifth of the non-poisoned, the fiftieth of the former like the one-hundredth or the one-hundred-and-fiftieth of the latter, and so on. In other words, the acidified muscle is already fatigued at the beginning of the series, and with stronger doses of the acid the fatigue is more pronounced. Sarcolactic acid is truly named a fatigue substance. Whether, however, the acid in the free state exerts its depressant action is unknown. While it is conceivable that immediately on its formation it may act on the protoplasm of the cells in which it arises, it occurs in the blood not free but as a neutral salt, probably of potassium. I find the action of potassium sarcolactate to be indistinguishable, qualitatively, from that of the free acid, although a stronger solution of the former is required to produce the same quantitative effect.

After the injection of a few cubic centimeters of a one-fifteenth gram-molecular solution of mono-potassium phosphate, the poisoned gastrocnemius shows the following phenomena (Fig. 3): The first contraction of the series is usually closely similar to the first contraction of the normal muscle; very soon, however, the poisoned muscle shows signs of fatigue, and then rapidly passes through the sequence of events which we have already recognized as characteristic of the gastrocnemius. The poisoned muscle becomes fatigued so rapidly that at last it is scarcely able to lift the weight, while its normal mate is still in excellent working condition. Mono-potassium phosphate, therefore, diminishes the working power and is distinctly fatiguing. I have made some attempt by means of parallel experiments with mono-sodium phosphate, which I find also fatiguing, to discover whether the action of the potassium salt is due to its potassium or to its hydrogen ions. So far as my experiments have gone they indicate that the two substances share in the general effect; the latter seems not to be an acid action solely. The depressant influence of the potassium ions on striated muscle is not unexpected in view of their inhibitory and relaxing effects on the heart, which have been observed by Howell[48] and will be discussed by him in a later lecture before this Society.

Carbon dioxid, when injected into the circulation, produces a result in general similar to that of sarcolactic acid or mono-potassium phosphate (Fig. 4). Like them, it is markedly fatiguing.

48. Howell: Amer. Jour. of Phys., 1898, vol. ii, p. 47; 1901, vol. vi, p. 181; 1906, vol. xv, p. 280.

My results seem to show a certain qualitative physiologic difference between mono-potassium phosphate on the one hand and sarcolactic acid and carbon dioxid on the other, though at present I would not assert this with positiveness. While the muscle under the influence of the salt seems at first not fatigued, but runs through its fatigue course rapidly, the muscle poisoned by sarcolactic acid or carbon dioxid appears fatigued at once, the first contraction being usually slower than the first normal contraction. Whether this apparent difference, which at best is only secondary, proves true or not, it is evident that sarcolactic acid, both free and combined, mono-potassium phosphate and carbon dioxid are fatiguing to muscle. Though I have not yet investigated their action on the central nervous system, the legitimacy of the term fatigue substance is abundantly proved. The organism produces normally in the course of its activity a number of acid substances which tend to inhibit further activity. Fatigue is due in great measure to the depressant action of these toxic products of metabolism on the body tissues, particularly on the muscular system, and the sensation of fatigue is in large part the psychic manifestation of the recognition of this depressant action.

Fig. 4.—Record of fatigue of companion gastrocnemius muscles of the frog, one normal, the other under the influence of carbon dioxid. The longer, or, in the later contractions, the lower curves, are those of the poisoned muscle. Every fiftieth contraction is recorded.

My friend and colleague, Professor Curtis, whose invaluable studies of the early history of medicine often correct our false perspective and distorted judgments by showing us how our modern discoveries were foreshadowed long before, has called my attention to the following passage from the Hippocratic writings,[49] which I am permitted to quote in his own translation:

As to the varieties of fatigue which the body may experience, matters stand as follows: Untrained men are fatigued by every exertion, for no part of the body has been exercised at any kind of effort. Trained bodies are fatigued by unaccustomed forms of exertion and also by their accustomed exercises pushed to excess. Such are the forms of fatigue, and their potency takes effect as follows: The untrained have moist flesh, and when they exert themselves the body becomes heated and they yield the product of liquefaction in abundance. Of this, whatever is sweated out or purged away with the breath causes no trouble except to so much of the body as has undergone the unusual depletion, but whatever remains of the product of liquefaction causes trouble, not only to the unduly depleted part of the body, but also to whatever part receives the liquid in question, which is not akin to the body, but hostile. It does not so much affect the fleshless parts of the body, but rather the fleshy, causing trouble until it takes itself off. Inasmuch as it fails to move about, it keeps quiet and becomes heated, itself and what accrues to it; and if there come to be abundance of this separated stuff it may overpower the healthy parts so that the whole body becomes heated likewise and [the stuff in question] may cause severe fever.

These ideas, recorded twenty-three hundred years ago and in language to us quaint, are strangely prophetic. To Hippocrates and his contemporaries, as to us, excessive activity of a part of the body may cause general fatigue. To them the result is due to the "product of liquefaction" which is "hostile" to the body and affects chiefly the "fleshy" parts, there "causing trouble until it takes itself off." To us the result is due to "fatigue products," which are "toxic" to the body and affect chiefly the muscles, there "causing trouble" until they are either excreted or rendered innocuous by chemical change. Those same Greeks, however, whose speculations came so near the truth in one regard, knew not even the functions of the muscles or the other parts about which they were writing!

It is not improbable that future research will discover other fatigue substances besides those which I have named. Mention should here be made of the claim of Weichardt,[50] working in Zuntz's laboratory in Berlin, to have isolated from fatigued muscles a true toxin, of a chemical and physical nature like bacterial toxins, which, when introduced in minute quantity into the body, is capable of giving rise to the phenomena of fatigue. Weichardt further claims to have obtained by the usual methods of the bacteriologists an antitoxin endowed with the power of neutralizing the fatiguing properties of the toxin. So sweeping a discovery needs confirmation before it can be accepted. But it is hardly credible that the few substances which I have mentioned should prove to be, of all the links in the long metabolic chain, the only substances that are depressant to protoplasmic activity. It is the intermediate substances that we must watch especially. Autolysis opens up also a new field full of interest in this connection.

Concerning the production of fatigue substances by the central nervous system, very little is known. There is no certain evidence that sarcolactic or other organic acid is produced by nervous activity. In view of the striking fact which Macallum[51] has brought forward by means of his careful microchemical methods, namely, that potassium is not to be found in the neuron, we can not believe that potassium salts play any rôle in nervous fatigue. Carbon dioxid is, however, present, and to it has been ascribed by Verworn[52] an important share in the phenomenon in question. Yet Hill and Nebarro[53] have investigated the content in carbon dioxid of the venous blood which has passed through the muscles and that which has passed through the brain during both rest and activity, and find the systemic blood to contain between two and three times as much of this gas during rest as the cerebral venous blood contains, and from three to seven times as much during activity. They conclude that the metabolism of the muscles is, during rest, twice or three times as great as that of the brain, and that during activity muscular metabolism increases enormously in comparison with the metabolism of the brain—a further suggestion that the fatigue of the muscles is of pre-eminent importance relative to that of the central nervous system.

That intense mental activity is capable, however, of giving rise within the body to profound chemical changes

49. Hippocrates: "Oeuvres complètes d'Hippocrate. Traduction nouvelle avec le texte grec en regard," E. Littré, vol. vi, p. 582, Paris, 1849.

50. Weichardt: Münch. med. Wochsch., 1904, pp. 12 and 2121.

51. Macallum: Jour. of Phys., 1905, vol. xxxii, p. 95.

52. Verworn: Arch. f. Anat. u. Phys., Phys. Abth. Suppl., 1900, p. 152.

53. Hill and Nebarro: Jour. of Phys., 1895, vol. xviii, p. 218.

is proven by the not unfrequent occurrence of such cases as the following, this striking instance of which was recently related to me by its observer, a well-known medical authority: A nursing mother was subjected for a few minutes to intense fright. Her child, after taking the mother's milk some three or four hours later, was attacked by convulsions. But there is no evidence that the toxic substance in the mother's milk was produced in the brain cells. Indeed, the probability is that the deranged metabolism was localized elsewhere, an indirect result of the nervous shock.

The action of fatigue substances is not confined to the tissues in which they arise. The excessive activity of one tissue is capable of causing fatigue to appear in others. We all know that fatiguing muscular work diminishes our brain power, and I have already referred to the experiment by which Mosso's school has demonstrated that after intense mental labor the muscles are less capable of performing work on direct stimulation. Thus, localized activity is capable of producing general fatigue, a fact which is often overlooked in our daily life. The explanation of this is afforded by Mosso's[54] well-known experiment: A dog was fatigued by long continued running; his blood was then transfused into the vessels of a second dog, from which an equivalent amount of blood had been withdrawn, with the result that the second dog exhibited the usual phenomena of fatigue. The blood had evidently become charged with the fatigue substances produced in the muscles, and thus they were able to reach all parts of the body. Geppert and Zuntz[55] and others have demonstrated that in muscular work resulting in general fatigue the alkalinity of the blood, as determined by titration methods, is markedly diminished. Zuntz[56] has pointed out that in such a condition the circulatory and the respiratory organs are first affected, later the digestive and the urinary organs. Geppert and Zuntz[55] and Lehmann[57] have demonstrated that the increased action of the respiratory center in muscular work is probably caused by the stimulating action of the acid fatigue substances arising in the muscles. It seems to be a fact that in general fatigue the coagulation of the blood is hastened, while according to Manca[58] the red corpuscles break down less rapidly than before. Ceni[59] claims that the bactericidal power of the blood is diminished in brief and increased in prolonged muscular fatigue. Salvioli[60] finds the salivary and the gastric glands to secrete less during intense muscular fatigue, and the gastric juice to lose in acidity and in digestive power. Although exact researches are here needed, there are probably few physiologic functions that are not affected unfavorably by the prolonged and excessive activity of the muscular and the nervous systems. In such a condition the normal action of the tissues may easily give place to pathologic action, as is illustrated by the fever resulting from over-exertion. Fatigue undoubtedly diminishes the resistance of the tissues to bacteria and also predisposes the individual to attacks from diseases other than bacterial. Specific investigation in its relation to pathologic conditions is, however, sadly lacking.

Nevertheless there is one subject in pathology concerning which we can speak in more than general terms. The fact that certain acid substances are depressants has a far wider application than merely in the causation of physiologic fatigue. Pathologists have recognized in recent years as a widespread phenomenon the production in quantity of acids, which load the blood and the tissues and give rise to the condition known as acid intoxication. This condition has been demonstrated notably in diabetes mellitus, fevers, carcinoma, anemia, acute yellow atrophy of the liver, phosphorus and arsenic poisoning, arthritis deformans, various disorders of digestion, and inanition; and the acids which are involved are such as exist normally only in small quantities, if at all, and are intermediate products of metabolism, the results of incomplete oxidation. In nearly all, if not all, of the diseases mentioned, among the prominent symptoms are marked physical depression and ready fatigability. Zenoni[61] has made ergographic tracings from diabetics and finds advanced cases capable of a very small amount of muscular work, a limited number and a small amplitude of contractions, not rarely accompanied by contracture, and an early onset of fatigue. The facts of the toxic theory of fatigue suggest that we have in the pathologic acids and the depression and ready fatigability a relation of cause and effect.

Fig. 5.—Record of fatigue of companion gastrocnemius muscles of the frog, one normal, the other under the influence of β-oxybutyric acid. The longer, or, in the later contractions, the lower curves, are those of the poisoned muscle. Every fiftieth contraction is recorded.

It is a well-known fact that the injection of these acids into living organisms is followed by the symptoms that follow their spontaneous formation within the body—artificial acid intoxication resembles spontaneous acid intoxication. I have been able to demonstrate on muscle the fatiguing action of one of the pathologic acids, namely, β-oxy-butyric acid, which is common in diabetes mellitus (Fig. 5). A frog's gastrocnemius under the influence of β-oxy-butyric acid reacts not unlike a muscle under the influence of sarcolactic acid or carbon dioxid. There is pronounced fatigue from the beginning, a curve of contraction that is high and long at first and becomes lower and longer as the experiment proceeds, and an early onset of exhaustion. Such a muscle is already in a fatigued condition, even before the series of stimulations has begun. Such a muscle within the body would undoubtedly give rise to fatigue sensations. To what extent within the body the free pathologic acid acts directly on the muscles is a problem like that presented by sarcolactic acid and is yet unsolved. It seems probable that the muscles are one of the places of origin

54. Mosso: Verhand. d. internat. med. Cong. zu Berlin, 1890, vol. II, pt. 2, p. 13.
55. Geppert and Zuntz: Arch. f. d. ges. Physiol., 1888, vol. xlii, p. 189; 1895, vol. lxii, p. 295.
56. Zuntz: Le bull. med., 1903, vol. xvii, p. 778.
57. Lehmann: Arch. f. d. ges. Phys., 1888, vol. xlii, p. 284.
58. Manca: Arch. ital. de biol., 1895, vol. xxiii, p. 317.
59. Ceni: Arch. ital. de biol., 1893, vol. xix, p. 293.
60. Salvioli: Arch. ital. de biol., 1892, vol. xvii, p. 248.
61. Zenoni: Il Policlinico, Sez. med., 1896, vol. iii, p. 538.

of the pathologic acid, and it is possible that the free acid exerts its depressant action on the cells in which it is formed. It seems to occur in the blood of diabetics, however, not free, except in the most extreme cases, but in combination with certain metals, such as sodium, potassium and ammonium. I have investigated the salts so formed, namely, sodium, potassium and ammonium oxy-butyrate, which, it should be emphasized, are not acid in reaction, and I find their action on muscle to be similar qualitatively to that of the free acid. Quantitatively they differ among themselves, the potassium salt being the most powerful. While, therefore, the free acid may possibly act as a fatigue substance to the cells in which it originates, its salts may act through the blood on distant cells and give rise to general fatigue, physical depression and ready fatigability. My results do not seem to require the acceptance of Minkowski's[62] hypothesis, based partly on his own observations and partly on those of Walter,[63] that the attachment of the sodium of the blood forces the carbon dioxid, continually produced, to remain in the tissues, and that the fatigue is then referable to it, rather than to the pathologic acid or its salts. My present inclination, however, is toward the belief that all these substances are causative. The salts certainly are so, and the beneficial effects which are known to follow the administration of alkalies, such as sodium bicarbonate, seem to demand free acid and perhaps carbon dioxid also as causative agents. However this may be, I wish to emphasize my main contention, namely, that in acid intoxication the tissues of the body are in a state wholly analogous to the state of fatigue, in so far as the latter is due to toxic substances. The facts that the fatigue products are produced in the one case normally and in the other pathologically and that they differ in composition in the two cases are altogether secondary. Their physiologic effects are the same. Heretofore attention has been directed chiefly to the extreme effects of the pathologic acids, as, for example, the production of diabetic coma. We should not, however, forget that long before these extreme effects are manifested the same causes are producing evil, if less obvious, phenomena and rendering the cells less capable of their proper functions.

Not all cases of fatigue accompanying pathologic conditions are, however, due to excessive production of acid. In diabetes itself we have an excellent example of the twofold cause. The body is not only intoxicated by acid, but carbohydrates are wanting, and I can cite no more typical instance of disease in which fatigue may be traced to its two recognized causes. The two causes are also present in fevers and inanition, and doubtless in other pathologic conditions, though here investigation is needed.

Several investigators, especially Abelous and Langlois[64] and Albanese,[65] have studied the relation of the suprarenal bodies to fatigue. They find that both in frogs and in mammals, after removal of these bodies, fatigue occurs very promptly on the performance of muscular work. The extract of the muscles of an animal dying as the result of removal of the bodies possesses a toxicity similar to that of the muscles of a normal animal tetanized to exhaustion. They infer that the muscular weakness following removal of the suprarenals is due to toxic substances of a similar nature to those producing physiologic fatigue, and that the function of the suprarenals is to supply antitoxic substances. In view of our present knowledge of the physiologic action of adrenalin in its various forms, it seems more probable that the weakness is to be explained by the absence of the normal tone-producing internal secretion of the bodies in question, and this is doubtless the true explanation of the muscular asthenia present in persons suffering from Addison's disease. Abelous, Charrin and Langlois[66] have published striking erographic tracings of such cases.

Future research will probably reveal much regarding the relation between perverted metabolism and fatigue in pathologic conditions. In diabetes, for example, the possible fatiguing action of diacetic acid and of acetone ought to be investigated. In poisoning by phosphorus and by arsenic, in anemia and in certain diseases of the liver, sarcolactic acid is eliminated in the urine, and the physiologic action of this substance, already discussed, is probably responsible, in part at least, for the physical weakness accompanying these conditions. Because of the interest connected with the formation of aromatic bodies in the intestines as a result of putrefaction, and the supposed toxic action of some of these bodies on the central nervous system, at the suggestion of Professor Herter I have recently made a preliminary study of the action on muscle of indol, skatol and methyl mercaptan, and find all to possess some degree of fatiguing power.

In view of the fact that fatigue occupies so prominent a place in our daily life in both health and disease, it is strange that outside of the nostrum vendors not more serious endeavors have been made to provide specific antidotes for it. That various chemical substances delay fatigue is well known. I may be permitted here to refer to the study of the action of ethyl alcohol on muscle by Salant and myself[67] several years ago, in which we found that in medium quantity this substance exerts a favorable action, which is characterized by a quickening of the contraction; a quickening of the relaxation; the power of making a larger number of contractions and of performing a larger amount of work in a given time; an increase in the working time, or, in other words, a delay of fatigue; and the power of making a larger number of contractions and of doing a larger amount of work before exhaustion sets in. This action is exerted directly on the muscle protoplasm itself, not on the intramuscular nerve endings. In large quantity alcohol exerts an unfavorable action which is, in general, the reverse of that caused by medium quanties. The favorable action seems to be followed by unfavorable after-effects. Alcohol can not, therefore, be considered as worthy of ranking among the valuable antidotes to fatigue. And the same may be said of other substances of similar physiologic properties. A true antidote must recognize the causes. Both scientific experience and the experience of unscientific mankind seem to have demonstrated the real value of sugar in its various forms as a partial restorer of working power, and the old wives' prescription of cooking soda for one's tired feeling is certainly justified by the administration of sodium bicarbonate in advanced diabetes, if indeed this substance is not of actual benefit in ordinary daily physiologic fatigue. But at best sugar and alkali are only in part efficacious, and mankind at

62. Minkowski: Naunyn's Mitth. aus. d. med. Klinik zu Königsberg, 1888, p. 174.

63. Walter: Arch. f. exp. Path. u. Pharm., 1877, vol. vii, p. 148.

64. Abelous and Langlois: Arch. de physiol., 1892, vol. iv, pp. 269 and 465.

65. Albanese: Arch. ital. de biol., 1892, vol. xvii, p. 239.

66. Abelous, Charrin and Langlois: Arch. de physiol., 1892, vol. iv, p. 721.

67. Lee and Salant: Amer. Jour. of Phys., 1902, vol. viii, p. 61.

present can administer no food or drug that can push the wearied cells up the metabolic grade, either simultaneously with their descent or quickly after the descent has ceased. Only the assimilation and detoxication that normally come with rest—and, best, rest with sleep—are capable of adequate restoration of working power. Fatigue is a phenomenon of metabolism; recovery is a phenomenon of metabolism. To-day's research reveals only how much more complex is the body's metabolism than yesterday we thought it to be, and in the problem of fatigue there is probably much more before us than behind us.

SERO-PROGNOSIS OF TUBERCULOUS PLEURISIES.*

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[TRANSLATED BY MAZŸCK P. RAVENEL, M.D., PHILADELPHIA.]

The general idea of sero-prognosis is personal with me. In 1897[1] I showed in regard to typhoid fever that the intensity of the agglutinating power of the blood is in inverse proportion to the gravity of the infection and in direct proportion to the resistance of the patient. I established this by 112 observations on typhoid fever with studies of the agglutination curve and by numerous observations on animals. In like manner Griffon[2] has shown that the maximum agglutinating power of the blood in pneumonia is found at the moment of recovery, and that this agglutinant power is wanting in mortal cases. In tuberculosis, which is not a cyclical disease, the facts are less conclusive. However, in conjunction with Arloing[3] I have found, since 1898, that the agglutinant power of the blood is ordinarily greater in cases which are benign, or on the way to recovery, and that it is lacking often in the grave and fatal forms. Many authors (Bendix, Mongour, Descos) have confirmed these findings.

The study of the agglutinating power of the blood serum and of the pleural serosity in tuberculous pleurisies has given some very interesting facts from this point of view, and capable to a certain degree of practical application.

In 1898 and 1900[4] I studied the agglutination of homogeneous cultures of the tubercle bacillus by tuberculous serous effusions and my own conclusions, based on 46 cases of tuberculous pleurisy, were as follows:

1. The non-tuberculous serous fluids do not agglutinate the bacillus of Koch. 2. The greater part of the tuberculous serous fluids agglutinate the bacillus of Koch in the proportion of 1 to 5 up to 1 to 20. 3. A certain number of tuberculous serous fluids cannot give a positive reaction even in the proportion of 1 to 5. In general this is found in grave or fatal cases with lesions especially virulent or occurring in tuberculous people in the last stage. However, in certain benign tuberculous pleurisies the sero-reaction of the pleural effusion may be entirely absent at the beginning, and only become positive at the end of a certain time—in general, about the time of recovery. 4. The agglutinating power of the blood is not always equal to that of the serous fluids. It can be more or less elevated, or exist in the absence of that of the serous fluid, and *vice versa*. 5. In favorable cases the agglutinating power of the serosity, or of the blood, may rise progressively. 6. The study of effusions of the serous membranes brought about experimentally in animals confirms all of these findings. Consequently, in practice, (a) a clearly positive sero-reaction beginning at 1 to 5 with the serous liquid constitutes a sign of great value in favor of the tuberculous nature of the effusion; (b), a negative sero-reaction constitutes only a presumption against the diagnosis of tuberculosis. In such cases it will be necessary to repeat the examination by the sero-reaction; (c) the examination of the agglutinating power of the blood, and of its intensity, will give interesting facts for comparison with those of the pleural reaction.[5]

At this time I also stated:

As we have demonstrated experimentally with Arloing,[6] there is an inverse ratio on the one hand between the gravity of the tuberculous lesion, resulting from the virulence of the bacillus and from the receptivity of the soil, and on the other hand, the intensity of the agglutinating power of the blood. . . . Grave or mortal pleurisies, human or experimental, give only very feeble or oftener a negative reaction. On the contrary the benign or curable pleurisies in man or those produced in an animal by a very much attenuated tuberculous virus give almost always a positive sero-reaction, often elevated in proportion as the disease is less grave. Finally, in an animal already possessing an agglutinating power we have been able by inoculation with a highly virulent tuberculous virus to bring about a pleurisy the effusion from which presented an agglutinating power growing more and more feeble until death.

Since that time I have pursued my researches at the Hotel Dieu at Lyon, and have studied and followed in parallel lines the clinical evolution and the agglutinating power of sera (blood and pleural effusion) in 115 patients suffering with non-tuberculous pleurisy.

I have always made the study of the agglutinating power under the same conditions, following the technic pointed out by Arloing and myself in numerous publications. As far as possible I have multiplied the drawings of blood and of the pleural effusions, following as closely as possible the variations of the agglutination in the course of the disease; i. e., the agglutination curve. From a clinical point of view my patients have been minutely observed and followed during their stay in the hospital, and after going out as long as possible. The nature of the pleurisy was proven not only clinically, but by the inoculation of the pleural effusion into guinea-pigs, and by cytology.

In the future I purpose publishing the complete results of all of these findings. At present I give only that which concerns the relation between the agglutination and the evolution of the disease, between the clinical prognosis and the sero-prognosis. The clinical prognosis can be given only by the evolution of the disease in the hospital. In 1904-5 we made inquiries on our 115 patients after their discharge from the hospital. The record of a large number of these we have thus been able to trace, sometimes with great difficulty, and the results obtained are given in the theses of Grillot[7] and of Pallasse.[8]

Out of the 115 patients 35 died at the hospital, 12 died after their discharge, 42 recovered, and 25 we have

* This article forms a part of the series of studies on the signification of the agglutinating reaction of humors.

1. Courmont, Paul: "Séro-pronostic de la fièvre typhoïde," Thèse Lyon, 1897; Revue de Médecine, 1897 and 1900.
2. Griffon: "L'agglutination du pneumocoque," Thèse de Paris, 1900.
3. Arloing, S., and Courmont, Paul: "Le séro-diagnostic de la tuberculose," Gazette des hopitaux, December, 1900.
4. Courmont, Paul: "Séro-diagnostic des épanchements tuberculeux," Presse Médicale, June 11, 1898, and Congrès de la tuberculose, Paris, 1898.
5. Courmont, Paul: "L'agglutination du bacille de Koch par les épanchements tuberculeux." Archiv. de méd. expér., November, 1900.
6. Arloing, S., and Courmont, P: "Des causes qui modifient le pouvoir agglutinant dans le sang des sujets expérimentalement tuberculeux." Jour. de physiol. et pathol. générale, No. 1, January, 1900.
7. Grillot: "Séro-diagnostic et séro-pronostic dans la pleurésie tuberculeuse." Thèse Lyon, 1904.
8. Pallasse: "Valeur pronostique de la quantité de l'épanchement dans les pleurésies tuberculeuses." Thèse Lyon, 1905.

been unable to trace. As regards these last we have based their prognosis on their condition at the time of their discharge from the hospital. The conclusions at which we have arrived are not based then on superficial and hasty observation. Our results extend over a period of seven years and some of our patients have been followed during this entire time. Certain recoveries did not remain permanent during these years; in other cases a secondary tuberculous infection, more or less early, has come on to modify the impression of some prognostications which were too hasty. From this long and patient study, extending over seven years and taking in 115 cases, and several hundred sero-agglutination tests, certain striking conclusions are derived, confirming and strengthening my views expressed in 1898.

The Relations Between the Evolution of Tuberculous Pleurisies and the Agglutinating Power of the Pleural Effusion.—We will give at the present time only results as a whole—very striking by their clearness. Although in each case we have studied the agglutinating power of the blood at the same time as that of the pleural effusions, and although the comparative study of the two possesses a great interest, we will speak here only of the agglutinating power of the pleural effusion.

I have divided my cases into two series according as the pleural effusion agglutinated the homogeneous cultures, beginning in the proportion of 1 to 5, or did not possess the agglutinating power at least in the proportion of 1 to 5, and I have compared the number of deaths, exacerbations, and of recoveries in the two series.

1. *Pleurisies in which the effusion agglutinates.*

Of these there are 67 cases, in which the agglutinating power varied from 1 to 5 up to 1 to 20 and more. Of these 67 patients 50 recovered or improved very much. Many of the recoveries or improvements have been followed during some years. The remaining 17 died either in the hospital or during the years which followed.

It is interesting to note the proportion of agglutination in those who recovered and in those who died:

Among 67 patients, agglutinating power was demonstrated in 33; 1 to 10, 1 to 20 and above; of these, 28 recovered and 5 died; in 34 there was agglutinating power of 1 to 5 only; of these, 22 recovered and 12 died.

Out of a total of 67 cases with a positive reaction, we have 50 recoveries, that is to say, 75 per cent.; in 33 cases with a strong reaction, 28 recoveries, 79 per cent., and in 34 cases with a feeble agglutination, 22 recoveries, or only 65 per cent.

2. *Pleurisies in which the effusion does not agglutinate.*

It is not necessary to say that we are speaking always of tuberculous pleurisies, and in the absence of the positive sero-reaction the diagnosis was assured, as in the preceding cases, by inoculation, by the clinical history, and often by the cytology. We have 48 of these cases in which the sero-reaction was negative in the proportion 1 to 5, as many times as we examined them, often 4 to 5 times in the same subject during the course of the pleurisy. Out of these 48 cases we have 13 recoveries or permanent ameliorations, 27 per cent; 35 deaths or exacerbations, 73 per cent. Summing up, we have in cases with positive reaction, 75 per cent. recoveries, and 25 per cent. of deaths. In the cases with negative reaction 27 per cent. of recoveries, and 73 per cent. of deaths or exacerbations.

These figures speak for themselves. One can sum them up somewhat schematically in saying that the patient with pleurisy in whom the effusion agglutinates has about three chances out of four for recovery; the patient in whom the effusion is not agglutinant has about three chances out of four of dying. It appears clear then that the agglutination reaction may be the sign of a curative process, of the defense of the organism, or of a lack of virulence of the infection. Two other points support this theory. In the table of agglutinant pleurisies, those which are most strongly agglutinant have the best prognosis (79 per cent. of recoveries); and if one compares the percentages of recoveries in the pleurisies with high agglutination, feeble agglutination, or no agglutination, the result is as follows: In 33 cases of pleurisy in which there was a strong sero-reaction (1 to 10 and above), 75 per cent. terminated in recovery and 21 per cent. terminated fatally.

In 34 cases of pleurisy in which there was a feeble sero-reaction (1 to 5), 65 per cent. terminated in recovery, while 35 per cent. terminated fatally. In cases in which the sero-reaction was absent, recovery took place in only 27 per cent., while 73 per cent. terminated fatally.

We have here a very interesting scale of progression, which leads to the following conclusions: The prognosis of tuberculous pleurisy with effusion is favorable according to the intensity of the agglutinating power of the pleural liquid, and grows worse with the diminution or absence of this reaction.

On the other hand we have found very often that the agglutinating power of the effusion increases very sensibly as recovery progresses, but diminishes in mortal cases toward the approach of the fatal termination.

EXAMPLES.

CASE 1.—G., aged 18, benign sero-fibrinous pleurisy, recovery.

Ninth day, lymphocytes in pleura, 67 per cent.; agglutination, 1 to 5.

Fourteenth day, lymphocytes in pleura, 89 per cent.; agglutination, 1 to 10.

Twenty-first day, lymphocytes in pleura, 96 per cent.; agglutination, 1 to 15.

CASE 2.—M., aged 28, pregnant, double febrile pleurisy, galloping consumption.

Twentieth day, lymphocytes in pleura, 91 per cent.; agglutination—blood, 1 to 10; pleura, 1 to 5.

Fiftieth day, lymphocytes in pleura, 93 per cent.; agglutination—blood, 1 to 10; pleura, 0.

Eightieth day, lymphocytes in pleura, 71 per cent.; agglutination—blood, 0; pleura, 0.

Ninety-fifth day, lymphocytes in pleura, ?; agglutination—blood, 0; pleura, 0.

CONCLUSIONS.

From the study of 115 cases of tuberculous pleurisy with effusion, followed during seven years, and from the investigation of the mortality of these patients, the following conclusions may be drawn:

1. The mortality is about 25 per cent. in cases the pleural effusion of which has agglutinating power, and 75 per cent., on the contrary, in those in which the fluid has no agglutinating power.

2. Among patients with an agglutinating effusion the number of recoveries is large in proportion as the agglutinating power is high.

3. One can observe the agglutinating power of the effusion increase in proportion as the case progresses to recovery, and, on the contrary, diminish in those patients in whom the termination is near.

4. These facts are a new proof of what we have held concerning typhoid fever, viz., that the agglutinating reaction is a reaction of defense, or at least goes parallel

with the reaction of resistance of the organism. It is in general in inverse proportion to the gravity of the disease and in direct proportion with the intensity of the resistance.

5. The study of agglutination in tuberculous pleurisies leads to important prognostic conclusions.

THE TREATMENT OF TETANUS BY INTRASPINAL INJECTIONS OF MAGNESIUM SULPHATE FOR THE CONTROL OF CONVULSIONS.

REPORT OF TWO CASES, WITH A DISCUSSION OF THE METHOD.

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NEW ORLEANS.

The extremely unfavorable prognosis which must be given in cases of tetanus and the doubtful value of the antitetanic serum save as a prophylactic remedy are of themselves sufficient justification for the trial of any new plan of treatment of this disease which may hold out even the faintest hope of obtaining better results.

With the object, therefore, of adding in a slight degree to the statistics of a newly-suggested method of treatment, I report two cases of tetanus which have been treated according to the method proposed by Dr. S. J. Meltzer.[1] While neither of the cases resulted in a cure, they are nevertheless reported, partly because of unusual features arising in each and partly because of my belief that the value of any new method of treatment can be obtained only from a study of its failures as well as of its successes. In one of the cases the method accomplished all that Dr. Meltzer claims for it, and the final result was due to other causes. In the other the negative result following the plan of treatment was due to inexperience as to the proper dose to be used rather than to the method of using it.

Dr. Meltzer[1] reports the cure of a case of tetanus at the Roosevelt Hospital by the use of an injection into the spinal canal of a 25 per cent. solution of magnesium sulphate in the proportion of 1 c.c. for every 25 pounds of body weight, for the control of the muscular spasms, after 115 c.c. of antitetanic serum had failed to produce any effect on the progress of the disease. The case is to be reported in detail by Dr. Blake, in whose service it occurred, but as yet I have not been able to get any exact information about it. On the theory that the violent muscular exertions during the convulsions cause a gradual wearing out of the patient's resisting powers, it seems reasonable to suppose that anything which tends to lessen the convulsions and to preserve the patient's strength will increase his chances of recovery. This theory forms the basis for the liberal use of such remedies as chloral and the bromids, and their general employment in these cases may be taken as an index of a belief that a cure of the convulsions will be followed by a cure of the disease. That this is not necessarily bound to follow is shown in one of the cases to be reported, in which the convulsions were completely controlled, but with no apparent effect on the further course of the disease.

A few days after the appearance of the article by Meltzer, a case of tetanus was admitted to the surgical service of Prof. Rudolph Matas at the Charity Hospital and was assigned to my ward. In the hope of duplicating the good result obtained by Dr. Blake, Professor Matas decided to try the use of the magnesium sulphate solution, and it is through his courtesy that I have been given the privilege of reporting the experiment. The history of the case is given in detail because of the several important facts which are brought out by a study of the clinical record of the course of the disease.

CASE 1.—E. Z., Mexican, aged 11, was admitted to hospital Jan. 9, 1906, at 9 p. m., and died Jan. 13, 1906, at 3:50 a. m. Time in hospital, three days and six hours. His previous and family history was not obtainable.

Present Illness.—On Jan. 1, 1906, while celebrating the arrival of the New Year, the patient accidentally shot himself in the palm of the right hand with an old toy pistol loaded with a blank cartridge. He was treated at the time by his family physician, the treatment being limited to the simple cleansing of the wound and the application of dry dressings. The physician refused to give antitetanic serum as a prophylactic, because he said he did not believe in it and never used it. The wound was cleansed and dressed every other day until January 9, when, the first symptoms of tetanus appearing, the family became alarmed and brought the boy to the hospital for treatment. This was on the ninth day after the injury.

Treatment.—The patient was admitted to the accident amphitheater at 7 p. m., and was found to be suffering with stiffness of the muscles of the neck and some muscular twitchings. A diagnosis of probable tetanus was made by the house surgeon, and under anesthesia the palmar wound was freely opened, cleansed and dressed. The boy was given 50 c.c. of antitetanic serum introduced into the spinal canal in the lumbar region before being admitted to Ward 1 of the surgical service, under the supervision of Professor Matas.

Course of Disease.—On admission to the ward, no distinct convulsions could be noted, but the patient complained of great stiffness of the neck and jaws and marked muscular twitchings were noticed all over the body. He was immediately put on the bromid and chloral treatment, gr. 30 of the former and gr. 15 of the latter being ordered every four hours. Stimulating nourishment was given freely during the night, which passed uneventfully, the patient resting well, with no convulsions, but some difficulty in swallowing when fed. Maximum pulse, 112 (at 4 a. m.); maximum temperature, 99.8 (at 4 a. m.).

January 10: During the day bromids and chloral were continued. Temperature ranged from 98.6 at 8 a. m. to 99 at 6 p. m.; the pulse ranged from 116 at 11 a. m., to 136 at 4 p. m.; respirations ranged from 28 at 8 a. m. to 36 at 2 p. m. The patient was quiet and dozing during the morning, but was very restless during the afternoon. Muscular twitchings were marked and increasing. He complained of severe pain in the chest and abdomen, the muscular walls of the latter being rigidly contracted. No distinct convulsions could be made out as yet. He could still open his mouth sufficiently to be fed, but had great difficulty in swallowing food.

During the night bromid and chloral were administered. Temperature fluctuated between 99 at 9 p. m. and 100, in the axilla, at 5 a. m.; pulse varied between 120 at 2 a. m. and 140 at 5 a. m.; respirations ranged between 24 at 9 p. m. and 36 at midnight. The patient was fairly quiet during the night, save for great muscular twitchings and severe abdominal pains at 9:30 p. m. There were no convulsions, but there was great difficulty in swallowing.

January 11: This was the eleventh day since the injury. Bromid and chloral were discontinued after one dose at 9:45 a. m. Up to that time the patient had been given gr. 450 of bromids and gr. 170 of chloral in thirty-six hours, with no apparent effect on the muscular twitchings.

At 9 a. m., thirty-eight hours after the appearance of the first symptoms of tetanus, the patient was given by mouth ℥ss of magnesium sulphate in an effort to clean out the bowels. The

1. Meltzer, S. J.: "Inhibitory and Anesthetic Properties of Magnesium Salts," Med. Rec., Dec. 16, 1905.

giving of this dose brought on the first noticeable convulsion, which was slight in character, and lasted only about ten seconds. After this, however, handling of the patient caused several slight convulsions. None of these lasted long, but each was distinct and fairly severe, the boy crying loudly from pain, and the head being drawn back in opisthotonos during them. This condition seemed to be getting rapidly worse.

At 10:30 a. m., on examination by Professor Matas, the patient was found in a marked tetanic state, with convulsions occurring every time he was handled or disturbed. These convulsions lasted only a few seconds, and the jaws during the intervals were only partially locked. The abdominal muscles were rigidly contracted at all times and very painful on palpation. After a thorough review of the case, and in view of the gloomy prognosis from the rapid setting in of the change for the worse, Professor Matas decided to try Dr. Meltzer's plan of injection of a solution of magnesium sulphate into the spinal canal in an effort to control the muscular spasms.

Injection of Magnesium Sulphate.—In order to avoid the causation of further convulsions from the unavoidable handling during moving of the patient, he was anesthetized in bed and then transferred to the operating room. After the most through preparation of the parts, 4 c.c. of a 25 per cent. solution of magnesium sulphate, previously sterilized by filtering and boiling, were introduced into the spinal canal by lumbar puncture. The estimated weight of the boy was 80 pounds, making the amount of solution 1 c.c. for every 20 pounds of weight, instead of for every 25 pounds, as suggested by Meltzer to be used for producing anesthesia. Dr. Matas experienced some slight difficulty in making the injection because the patient's muscles were not completely relaxed even under full anesthesia. A few drops of cerebrospinal fluid were allowed to escape, and the injection was made very slowly, ten minutes being taken to introduce it. It was hoped by this means to avoid trouble with the respiration, and as a further precaution against this the Fell-O'Dwyer apparatus was kept at hand in case it might be necessary to resort to artificial respiration.

While the patient was still under the anesthetic, the wound in the palm of the hand was examined, and several pieces of wadding were found, which were removed and sent to the pathologic department for examination. (The report from the department later showed an absence of tetanus bacilli in these.) In addition, 50 c.c. of antitetanic serum was given, 10 c.c. being injected into each sciatic nerve, 10 c.c. into each brachial plexus and 10 c.c. into the tissues around the wound. A fact noted at the time of injection was that even under complete anesthesia the abdominal muscles were never relaxed, the abdomen being rigid and board-like on palpation. The boy was returned to the ward after having been in the operating room forty minutes in all. His temperature at that time was 101 in the rectum; pulse, 120; respirations, 30.

Result.—At 12:15 p. m., forty minutes after the injection was made, all the muscles of the body were completely relaxed; the abdomen, heretofore the most persistently rigid part, was soft, and not in the least tender to the touch. The jaws were relaxed, and the mouth could be opened readily. Recovery from the anesthetic was complete and satisfactory save for a slight nausea. The patient was perfectly conscious, and said that he felt well, except for a sore feeling in the stomach, which was probably the after-results of the tonic spasms of the abdominal muscles.

At 4:15 p. m., four hours and forty minutes after the injection, the patient began to experience difficulty with respiration. A profuse bronchorrhea developed rapidly and the breathing grew rapid and shallow. The interne immediately administered gr. 1/150 of atropin sulphate by hypodermic, which, after a little while, seemed slowly to relieve the trouble, the bronchorrhea clearing up gradually, and the respiration getting slower and deeper.

At 4:30 p. m. I examined the boy. The respirations were still shallow, with a good deal of bronchorrhea and some cyanosis. The pulse was 140, weak and thready. Temperature, 102. All the muscles of the body were in a state of complete relaxation; handling of the patient and pinching of the skin of the legs and abdomen failed to produce the slightest muscular twitching. The abdomen was soft, and could be palpated without causing anything more than a feeling of soreness, which the patient referred to the pit of the stomach. The boy was fully conscious, could speak perfectly, could open his mouth wide and had no difficulty in swallowing water. He continued quiet during the afternoon, with no change save a slight improvement in the respirations; pulse ranged around 145.

During the night the patient was quiet and rested easily till midnight. At that time, twelve hours and forty-five minutes after the injection of the magnesium sulphate, the first symptoms of a return of the rigidity were noted in the right arm. The tonic spasms returned rapidly, and at 1:15 a. m. had extended to all the extremities and to the abdominal muscles. The boy screamed several times toward daybreak, but the nurse was unable to note any distinct convulsions. The temperature increased, going up to 101.5. Pulse and respiration about the same.

January 12: At 7 a. m. the temperature was 102; pulse, 144; respiration, 28. There was great difficulty in swallowing, and each effort to do so caused marked muscular twitchings, but no general convulsions could be noted as yet.

At 10 a. m. I examined the patient and the following facts were noted: Temperature, 102; pulse, 150 and thready; respirations, 30. The muscles of head, neck and abdomen were rigidly contracted. The head was bent slightly backward. There were no general convulsions, but there was distinct muscular twitching on handling. The patient responded to questions, but did not seem in full control of mental faculties. He complained constantly of pain, with groans and loud cries at intervals when the twitchings seemed greatest.

Second Injection.—As the first injection of the magnesium sulphate had relieved the patient's sufferings, and had afforded an interval of freedom from the muscular spasms with a certain amount of improvement, it was decided to repeat the injection in the hope that equally as good an effect might be obtained a second time. Accordingly, with the same precautions to avoid setting up convulsions during the transfer to the operating room, the boy was anesthetized in bed, and when fully under the anesthetic was removed to the operating room. Under strict aseptic precautions a second injection of a sterile 25 per cent. solution of magnesium sulphate (50 minims this time) was given into the lumbar spinal canal, the injection being made very slowly. Owing to the opisthotonos, which persisted under anesthesia, some difficulty was experienced in getting the needle into the canal; three trials had to be made before the cerebrospinal fluid was encountered. Four or five drops of this were allowed to escape in order to notice if any change had taken place, but it was found clear and normal in appearance.

Owing to the evident failure of the antitetanic serum to influence the course of the disease, no more of it was given. The rigid contraction of the abdominal walls under full anesthesia was noticed again this time. The patient was returned to the ward, having been in the amphitheatre forty minutes.

Result.—At 11:35 a. m., thirty-five minutes after the injection, all the muscles of the body were again completely relaxed, and the patient was resting easily, having recovered well from the anesthetic. The pulse was still high (158) and weak in character, and for this feature of the case digitalin, gr. 1/100, was ordered every three hours.

At 1:15 p. m., two hours and fifteen minutes after the injection, an attempt was made to nourish the boy by giving him a nutrient enema (32). While this was being given he was seized with a severe convulsion, lasting about fifteen seconds; during this attack the arms and legs became perfectly rigid, the jaws were tightly locked and the pulse was almost imperceptible. The convulsion passed away immediately on ceasing the enema, leaving the patient completely relaxed, save for the rigidity of the jaws, which lasted for about an hour.

At 2 p. m., three hours after the injection, trouble with the respiration set in, similar in character to that following after the first injection, and consisting of a profuse bronchorrhea with rapid and shallow breathing and some cyanosis. Atropin, gr. 1/150, was given, and the dose repeated in thirty minutes, which, with the application of external heat, relieved this con-

dition somewhat, but the patient was extremely weak. When I saw him at 3 p. m. the respirations were a trifle stronger and slower, and the muscular relaxation was complete. The pulse at this time was 168 and very weak. Nourishment by hypodermic, brandy m. xxx every hour, was added to the treatment.

A résumé of the clinical record for this day shows the following steady change for the worse in the boy's general condition, despite the fact that he had but one convulsion during the day:

Temperature ranged from 100.8 in the morning to 103 at 5 p. m.; the pulse ranged from 144 in the morning to 180 at 5 p. m.; respirations ranged from the same time from 26 in the morning to 36. The patient was unconscious from 3:50 p. m. After the convulsion following giving of enema there was complete muscular relaxation.

During the night the pulse steadily increased in frequency and weakened in force. Stimulation with brandy, m. xxx every hour, digitalin, gr. 1/100, every four hours, and atropin, gr. 1/150, every two hours, was of no avail, The pulse became weaker and weaker, reaching 192 at 10 p. m. The temperature gradually rose from 104 at 7 p. m. to 106 at 10 p. m. Respirations increased from 40 at 7 p. m. to 57 at 10 p. m.

The patient died at 3:50 a. m., January 13, forty hours and fifty minutes after the first injection of magnesium sulphate, without any convulsive attacks or muscular twitchings since the one caused by the giving of the nutrient enema fourteen hours previously. It was noted that the patient's heart failed before the respirations were affected, the pulse becoming imperceptible ten minutes before the last respiration was taken. Temperature postmortem was 108.2 by rectum. The body was claimed and no postmortem was allowed.

The second case occurred in the private practice of Professor Matas, who suggested the use of magnesium sulphate by Dr. Urban Maes, chief of clinic to the surgical department of Tulane University. The doctor has very kindly allowed me to report the facts, a courtesy which is greatly appreciated.

CASE 2.—Miss W., aged 24, gave negative personal and family history as regards present trouble.

Present Illness.—On Feb. 2, 1906, the patient was vaccinated under the strictest aseptic precautions by a dentist, and the wound sealed aseptically with sterile gauze held in place by adhesive strips. No trouble was experienced by the patient until February 19, seventeen days after the vaccination, when she noticed an inability to open the mouth freely. The dressing on the arm, which had not been touched so far, was immediately removed and the wound cleansed, a wet bichlorid dressing being applied. The vaccination was found to have taken well. An injection of 100 c.c. of antitetanic serum was given subcutaneously as soon as it could be obtained, but notwithstanding this the symptoms rapidly increased in severity.

Consultation.—When Dr. Maes saw the case in consultation, the following points were noticed: Temperature, 101; pulse, 120; respirations, irregular and about 30. The patient was suffering from marked convulsions, each one lasting from five to eight minutes, with from twelve to twenty minutes between each attack. The jaws were rigidly locked during the entire time. The general condition of the patient was fair.

Treatment.—In view of the fulminating character of the attack, and with a hope of obtaining some relief from the violent and frequent convulsions, it was determined to introduce the magnesium solution into the spinal canal. Accordingly, thirty hours after the first symptoms were noted, the patient was anesthetized locally, and 4 c.c. of a sterile 25 per cent. solution of magnesium sulphate was injected into the lumbar spinal canal, every precaution being taken to avoid infection. At the same time, wide excision of the wound was done under local anesthesia, and the wound saturated with powdered antitetanic serum. The patient's weight being estimated at 100 pounds, the amount of solution approximated 1 c.c. for every 25 pounds of weight. Slight difficulty was met in entering the spinal canal, and about ten minims of cerebrospinal fluid were allowed to escape.

Result.—On the next observation of the patient by Dr. Maes, seventeen hours after the injection, the following facts were noted: Temperature, 101; pulse, 160 and thready; respirations, spasmodic and irregular. Condition of muscles, tense, including the recti and digital muscles, the latter causing the characteristic *main en griffe*. The jaws were rigidly contracted. There was general cyanosis and the patient was comatose, with tetanic seizures, which were practically continuous, and involving the intercostal muscles and the muscles of the neck and diaphragm. No relief of convulsions had been noted to follow the injection.

Second Injection.—The condition of the patient being desperate and the family being anxious for the use of any means which might afford relief, a second attempt was made to control the convulsions, although Dr. Maes did not anticipate much good from the injection. With the patient in an almost moribund condition, a second injection of 4 c.c. of a 25 per cent. solution of magnesium sulphate was made seventeen and a half hours after the first. It proved of little value, and the patient shortly after succumbed to the disease, dying from respiratory failure, fifty hours after the appearance of the initial symptoms. The apex beat of the heart could be felt for three or four minutes after the last seizure involving the respiratory muscles. Cyanosis became marked, and the end came with eyes fixed and patient resting on head and heels in extreme opisthotonos.

Remarks.—At no time could it be noticed that any good had resulted from the use of the magnesium solution. Possibly the lengthening of the periods between each attack, which followed the first injection, might be attributed to this; the convulsions never ceased for a moment, however, and were equally as severe immediately after both injections as before.

COMMENTS.

So far as the use of the magnesium sulphate in these two cases is concerned, one showed a positive result in the control of the convulsions, while the other showed no change. This last failure, Dr. Maes and I both feel sure, was because of the use of too small a quantity of the solution in proportion to the severity of the attack, but on account of the limited experience we have had with the method Dr. Maes felt a natural hesitancy in exceeding the limits of dosage recommended by Meltzer. With a stronger solution or with a bigger dosage it is most probable that the spasms would have shown at least some slight abatement, and possibly might have been entirely controlled as in the first case. Further reference to the causes influencing the failure in this instance will be made later.

With the limited amount of data on hand it would be unfair to draw any conclusions in regard to the value of this line of treatment, but to our mind the simplicity of application is an appealing argument to its further trial, and we hope to be able to furnish more data as to its usefulness before long. As regards the two cases reported in this communication, the following points are deemed worthy of further emphasis:

1. Control of Convulsions by the Use of the Magnesium Sulphate Solution.—In Case 1 this was by far the most interesting feature, showing, as it did, the complete cessation of the muscular convulsions following the introduction of the magnesium solution into the spinal canal. At the time of both injections the rigid contraction of the abdominal muscles even under full anesthesia was especially notable, and the complete relaxation of these, as well as all the muscles of the body, forty minutes after the injection, verified to the fullest degree Meltzer's observations of the paralyzing effect of magnesium sulphate on the motor tracts of the spinal cord. The lasting effects of this paralysis were shown conclusively when four hours and a half later all attempts to induce muscular twitchings or convulsions, such as handling of patient, pinching of skin of legs and abdo-

men, failed to produce any result. The patient at that time was in a state of complete relaxation, could open the mouth wide and could swallow, and was conscious and talked freely to the attendants. The duration of the relaxed state for nearly thirteen hours before a return of the rigidity gave an interval of rest which could never have been obtained by any other mode of treatment, and during which the patient distinctly gained ground, only to fall back again on the renewal of the convulsive attacks. Had the second injection been given earlier, at the time of the first return of the rigidity, the interval of rest might have been lengthened indefinitely and a better final result might have been accomplished.

Case 2 was one of the fulminating type of the disease, with a rapid onset of severe symptoms and an immediate succumbing to the effects of the tetanus toxin. The long interval of time elapsing between the primary wound of vaccination and the appearance of the tetanic symptoms in all probability was not the true period of incubation, for, though the patient strenuously denied having touched the wound, it requires no great stretch of imagination to presume that the dressings were partially displaced at some time from a curiosity to see how the vaccination was "taking," and that at this time the tetanus germ gained entrance. In view of the extremely rigid aseptic precautions taken at the time of vaccination, and the long period of incubation before the onset of so severe an attack of tetanus, it is more reasonable to suspect an infection during the time in which the vaccination was taking than to imagine so unusually severe a fulminating case of tetanus following a seventeen-day period of incubation.

The failure of the magnesium sulphate to control the convulsions in this case is explainable in two ways: First, the fulminating type of the disease, with the rapid giving way of the patient's resisting powers, made it a hopeless case from the beginning; consequently the chances of a failure by any plan of treatment were largely increased. Second, the size of the dose of the magnesium was that ordinarily used by Meltzer for inducing spinal anesthesia for operative cases; consequently it was far too small for use in a pathologic condition whose main symptom consists of a hyperexcitation of the motor centers of the cord. We might just as well expect the same dose of chloral given to produce sleep to calm the ravings of delirium tremens as to expect the small amount of magnesium sulphate recommended for anesthetic purposes in a healthy person to have any calming effect on the hyperexcited spinal cord centers of tetanus. I firmly believe that if the quantity of magnesium sulphate given in this instance had been twice as much a marked influence on the convulsions would have been noted. Further experience with the use of the solution will bring a better knowledge of the dosage to be employed according to the severity of the attack. This was partly instanced in the first case, when, in an apparently mild case, a slightly stronger solution (1 c.c. to every 20 pounds) than the one recommended for anesthetic purposes (1 c.c. for every 25 pounds) proved sufficient to produce the desired effect.

2. Respiratory Disturbances Following the Injections.—The development of late respiratory difficulty following both injections of the magnesium in Case 1 was the only annoying feature of the treatment. Professor Matas had hoped that by the slow introduction of the solution into the spinal canal the unpleasant respiratory disturbances mentioned by Meltzer might be overcome. At the time of the injection everything was in readiness for the induction of artificial respiration in case it should be needed, but it was only after the lapse of several hours (4½ after the first injection, 3 after the second) that this trouble put in an appearance. The profuse bronchorrhea and rapid, shallow respiration which characterized it were very alarming, but administration of atropin, gr. 1/150, repeated in thirty minutes, checked it in a short while, only the two doses of atropin being given. The only explanation of the late appearance of the respiratory disturbance which we could suggest was an involvement of the respiratory center from the spreading of the paralyzing effect of the magnesium up to the medulla; this would explain the marked rise in the pulse rate which began about this time and which was due probably to a partial paralysis of the pneumogastrics, with a consequent rapidity and weakness of the heart action. In conjunction with the slow introduction of the solution into the canal, we would suggest propping up the patient in bed the moment muscular relaxation comes on, so as to limit by gravity the action of the drug to the cord proper. This procedure has been used to limit the action of the drug in intraspinal anesthesia with cocain. It is likely that in this way, with a better knowledge of the exactness of the dose required, the respiratory disturbances may be eliminated to a large degree.

In all cases to be treated by this plan it is advisable to have on hand some apparatus for producing artificial respiration, from the time the injection is made until the muscular relaxation is at its height. The injection should be made slowly, at least ten minutes being taken to introduce 4 c.c. of the solution into the canal. On the appearance of muscular relaxation the patient should be immediately propped up in bed to the semirecumbent position and kept in that position for several hours. If bronchorrhea, or rapid, shallow respirations with cyanosis appear, atropin, gr. 1/150, should be given and the dose repeated, if necessary, in from 30 to 40 minutes. If the condition becomes worse, artificial respiration should be used, and, as a last resort, withdrawal of cerebrospinal fluid and its substitution with an equal amount of sterile saline solution will be indicated to dilute the action of the drug. Meltzer has tried this with good results.[2]

That this respiratory disturbance is not permanent in character is shown by the fact that in Case 1, in which the trouble was experienced and relieved, the respiratory center was the last to fail, the heart apparently stopping fully eight minutes before the last gasp was taken. The absence of respiratory disturbances in Case 2 is another proof of the insufficiency of the dose used, as it is hard to imagine the development of signs of paralysis of the respiratory centers without some effect having been produced on the motor tracts of the cord. The respiratory failure at the end, in this instance before the heart stopped, was due to a mechanical interference with the muscles of respiration rather than to a failure of the centers in the medulla. Failure of the respiration during a convulsion is one of the usual causes of death in tetanus, but it has never been considered as being due to a failure of the respiratory center itself.

3. Death of Patient (Case 1) in a State of Complete Relaxation.—This fact, it seems to us, deserves particular emphasis, being, as it is, so out of the ordinary sequel of events in cases of tetanus ending fatally. We are so

2. Haubold and Meltzer: THE JOURNAL A. M. A., March 3, 1906.

accustomed to see the patient pass rapidly into a series of tonic convulsions, which increases in severity and frequency as the end comes, with death during an unusually severe one, that we are apt to attach a greater importance than they deserve to the muscular spasms as causes of a fatal result. It should always be borne in mind that the convulsions are but expressions of the action of the toxins which have been absorbed by the system, and that the result depends entirely on the quantity of these which have gained entrance to the body, provided, of course, that the patient does not die from mechanical interference with respiration by the convulsions. Case 1 bears out this observation of the majority of authorities on this point, for here we had an attack in which the convulsions were distinctly limited in number, mild and short in character, with two long intervals of complete muscular relaxation, and yet the pulse and temperature kept going up slowly and steadily, showing increasing effects of the toxins on the nervous system. Were it not for the lessened chances of respiratory failure during the convulsions, it would be a question whether any lasting good is accomplished in checking them any more than there would be in knocking out the temperature in typhoid in the hope of thereby curing the disease. It seems, therefore, that the value of this or of any other plan of treatment for tetanus which aims at a control of the muscular spasms is only palliative in nature, and that our efforts should rather be directed to the finding of some means of neutralizing the toxins of the disease once it has developed. When that has been accomplished the muscular convulsions will disappear of themselves. For the present, however, the use of the magnesium sulphate to control the spasms, and thereby to prevent death from respiratory disturbances, should be given further trial, on account of its ease of application and its comparative harmlessness when judiciously and cautiously used.

DIAGNOSTIC VALUE OF THE LEUCOCYTE FORMULA IN PERTUSSIS.*

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IMPORTANCE OF BLOOD EXAMINATION.

Whooping-cough is a far more serious disease than is generally supposed, and its diagnosis in the early stage is a matter of great importance, as it is at this time that the infection is most frequently spread. Any measure, therefore, which may help to its early recognition is worthy of careful study and investigation.

The examination of the blood in this disease, as in many other infections, has unexpectedly shown a condition which, in a certain number of cases, is abnormal and perhaps of diagnostic value. This condition consists of an increase, both relative and absolute, in the number of the lymphocytes—a lymphocytosis. Several series of cases have been reported showing this increase in these cells, but the number on record is still comparatively small. Therefore I have made some investigations on this subject with the object of determining how frequently this condition is found, how early in the course of the disease it occurs and hence of how much value blood examinations may be in early diagnosis.

* Read at the Annual Meeting of The Mississippi Valley Medical Association, Indianapolis, Oct., 1904.

REVIEW OF LITERATURE.

The first investigation of this question was by Frohlich[1] in 1897. He studied the blood in 55 cases, total counts being made in all; differential in 15. He found a general leucocytosis in all but 2 cases, and a lymphocytosis in 8 of the 15 examined. He came to the conclusion that this increase in the lymphocytosis was of diagnostic value in atypical cases, but that its value in ordinary cases was lessened by its appearance. As 13 of his patients were examined during or after the third week, however, and only 2 in the first week, his opinion as to its significance in the early stages seems hardly justified.

Meunier[2] made total counts in 30 cases and differential in 10 of these. He found that a lymphocytosis occurred early in all cases and considered it of great diagnostic value and of practical importance in preventing the spread of the disease, e. g., in schools.

De Amici and Pacchion[3] studied carefully 18 cases, 8 examinations being made in the catarrhal stage, 13 in the paroxysmal and 7 in the period of decline. A lymphocytosis was found in 15 of their 18 cases. They consider it of practical diagnostic value.

Stengel and White[4] reported 3 cases, all of which showed a lymphocytosis.

Wanstall[5] examined 19 children, all suspected of being in the catarrhal stage of whooping-cough. Later 15 of these proved to be pertussis. In 11 cases there was a lymphocytosis. He concludes that there are good grounds for the statement that an increased percentage of lymphocytes is of diagnostic value, occurring, as it does, before the onset of characteristic symptoms.

Muggia and Bertolotti[6] reported 35 cases in which they found a predominance of large mononuclear elements.

Isolated cases have been reported furthermore by Cabot,[7] Steven,[8] and others, which in general coincide with the above observations.

I now add to these reports 36 cases, 23 from my clinic at Rush Medical College and from private practice, and 13 from Dr. W. L. Baum's service at Cook County Hospital. The details of these cases briefly are as follows: The patients range in age from 6 months to 17 years. The total leucocyte count has been made in 29 cases and a general leucocytosis found in all but one. The counts range from 10,000 to 112,000. Differential counts have been made in all cases, 30 showing a lymphocytosis; 15 out of 16 patients examined in the catarrhal stage had a lymphocytosis. The percentages ranged from 34.3, in a 5 year old child, to 93 in a 4 year old. The latter was the one with a total of 112,000, was a severe case, and came to the clinic at the height of the disease. A count made 16 days later showed a total of 32,600 with 64 per cent. of lymphocytes, and great improvement in all the symptoms.

We have now for study 100 cases of whooping-cough in which differential counts of the blood have been made. There are also available total leucocyte counts from more than a hundred. I have grouped the reports on these

1. Frühlich: Jahr. f. Kindhlk., 1897, vol. xliv, p. 59.
2. Meunier: Compt. Soc. de Biologie, 1898, vol. i, p. 103.
3. De Amici and Pacchioni: Clin. med. Ital., 1899, vol. xxxiv, 52; also, Abs. Archiv. f. Kindhlk., 1902, xxxiv, 105.
4. Stengel and White: Univ. Penn. Med. Bull., 1902, vol. xiv, p. 318.
5. Wanstall: American Medicine, 1903, vol. v, p. 62.
6. Muggia and Bertolotti: Riv. di Clin. Ped., February, 1905; also, Abs. Med. Record, 1905, vol. lxvii, p. 552.
7. Cabot: "Clinical Examination of the Blood."
8. Steven: Lancet, 1902, vol. ii, p. 791.

cases according to age, averaged the total leucocyte count, the percentage of lymphocytes and polymorphonuclears and constructed curves on these averages. I have averaged the percentage of these two types of cells also according to the time of examination, catarrhal stage and paroxysmal stage, and plotted their curves. For purposes of comparison I have introduced into the charts normal curves based on estimates for different ages given by Karniski[9] and by Carstagen.[10] The importance of taking into consideration the age of the child in making differential counts has not been sufficiently emphasized by the authors quoted. The necessity for so doing is evident from a glance at the normal curves,

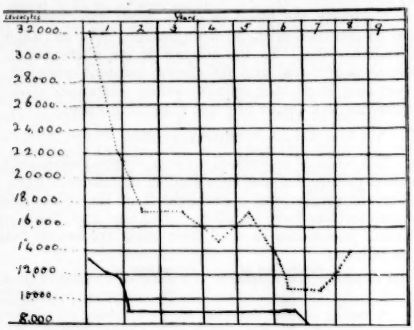

Chart 1.—Total leucocytes:—— normal; .... catarrhal stage.

which show the range of lymphocytes to be from 55 per cent. during the first year to 30 per cent. in the ninth year, and the neutrophiles for the same periods to range from 33 per cent. to 56 per cent. Thus a lymphocyte count of 50 per cent. at 6 years would be of considerable significance; at 1 year it would be of no significance. This variation in the leucocyte formula must be borne in mind in all blood work among children, especially in the present study.

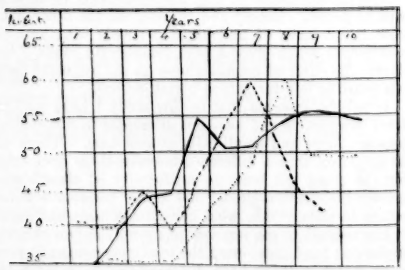

Chart 2.—Polymorphonuclear curve:—— normal; - - - - - paroxysmal stage; .... catarrhal stage.

Inspection of the total leucocyte chart (Chart 1) shows a general leucocytosis at all stages, most marked during infancy and early childhood. The comparatively high count during the first year is due to the occurrence of one count of 89,000.

The polymorphonuclear curve (Chart 2) during the catarrhal stage as a rule is relatively below the normal; the total count, however, in some years is so high, e.g., in the second year, that absolutely there is an increase over the number of the cells normal to the age. During the paroxysmal stage the curve is above the normal except during the fourth, fifth and eighth years. Concerning this increase during the paroxysmal stage I will speak later.

The chief interest centers in the lymphocyte curve (Chart 3). It follows in a fairly close parallel the downward trend of the normal curve but always above it, the increase being greatest during the first 4 or 5 years. Furthermore the increase is greater during the catarrhal stage than during the paroxysmal stage. At first sight this seems somewhat unnatural; if the pertussis infection cause a lymphocytosis, one would expect this lymphocytosis to increase with the severity of the disease, whereas it apparently diminishes. I believe that among the cases examined during the paroxysmal stage are some with complications, e. g., bronchitis, perhaps lobular pneumonia, and that these complications caused an increase in the polymorphonuclears and a corresponding decrease in the lymphocytes at this period of the disease. The increase in the polymorphonuclears has already been mentioned. So far as possible, I have studied by themselves the cases with complications, but

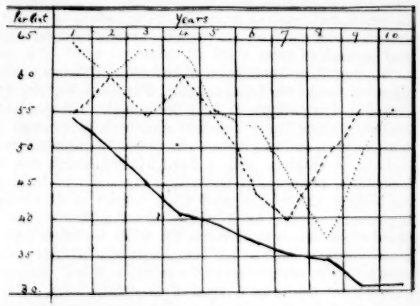

Chart 3.—Lymphocyte curve: —— normal; - - - - - paroxysmal stage; .... catarrhal stage.

the details are not always given with clearness and some complicated cases may have been included in the hundred cases regarded as uncomplicated. Whatever the cause, there appears to be a diminution in the lymphocytes and an increase in the polymorphonuclears during the paroxysmal stage.

While the average of the lymphocytes is thus above normal in each year, there are individual cases of course which show no increase. In actual figures, however, 87 of the 100 cases (87 per cent.) show a lymphocytosis at some time during the course of the disease. Analyzed as to time of appearance, we find that of 42 cases examined during the catarrhal stage 39, or 93 per cent., show the increase. As it is particularly in this stage that we wish accurate information it is gratifying to find such a large proportion of cases showing this characteristic condition of the blood at this time. How early the infection may cause this change is evident from the following: Eight cases examined in the first week all showed a lymphocytosis; one infant, aged 20 months, had a lymphocytosis of 65 per cent. after 5 days of cough; one child, aged 2 years, had a lymphocytosis of 60.3 per cent. after 3 days of cough. The last case was one of a family of 3, and the other 2 children already

9. Karnizki: Archiv. f. Klnd., 1903, vol. xxxvi, p. 42.
10. Carstangen: Jahrb. f Klndhlk., 1900, vol. lii, p. 215.

had whooping-cough; hence the early date of the blood examination.

In view of these observations made by so many different workers, there can be no doubt of the frequent occurrence of a lymphocytosis in the early stages of whooping-cough. The infection apparently has no effect on the eosinophiles.

It remains to be asked whether or not we find this blood change in other conditions likely to be confused with pertussis. It must be remembered that in the blood as well as in the nervous system and indeed in all parts of the unstable infant organism slight causes produce more marked and irregular results than they do in the more stable adult organism. Thus the blood and especially the leucocyte formula is easily upset in early life. It shows a marked tendency to revert to the fetal type, especially in any prolonged wasting disease, e. g., hereditary syphilis. In such conditions, we frequently find an increase of lymphocytes above the standard normal to the age. In general glandular enlargement, e. g., I have repeatedly found a lymphocytosis. Stengel and White have found the condition in occasional cases of pneumonia, also in typhoid, though in the latter at certain periods of the disease a lymphocytosis is the rule, as has already been shown.[11] The same authors also found a predominance of lymphocytes over neutrophiles in occasional cases of varicella, of enteritis, in rickets, eczema, focal epilepsy, convulsions, spastic cerebral palsy and pleural effusion.

None of these conditions, however, are difficult to distinguish from whooping-cough. Furthermore, the increase in lymphocytes is only occasional. Lymphocytic leukemia alone has a constant and high percentage of lymphocytes, and this disease can be easily differentiated.

It is in children with a hard violent cough due to bronchitis, pharyngitis, laryngitis, especially of influenzal origin, that we are most often suspicious of whooping-cough. And it is in these very conditions that a blood examination is of value, for while we often find a leucocytosis, there is no lymphocytosis, as has been shown by the observations of various authors. Stengel and White[4] report in 6 cases of bronchitis with a hard cough the following averages: Total leucocytes, 12,911; lymphocytes, 29.9 per cent.; polymorphonuclears, 68 per cent.

Wanstall's 4 cases, which failed to develop into whooping-cough, had the following averages: Lymphocytes, 33 per cent.; large mononuclears, 7.8 per cent; polymorphonuclears, 56.5 per cent.; eosinophiles, 1.9 per cent.; mast cells, 0.3 per cent.

Meunier[2] found no such change in the blood in bronchitis or tracheitis.

The following cases in my practice are of interest in this connection:

CASE 1.—A 5-year-old boy had been coughing hard for five days, after having been exposed to pertussis. His parents, making preparations for a European trip, were naturally anxious to know the nature of the cough. Physical examination showed considerable bronchitis. The blood was as follows: On April 5 the lymphocytes numbered 26 per cent. and the polymorphonuclears 73 per cent. On April 12 the lymphocytes were 31 per cent. and the polymorphonuclears 66 per cent. On April 19 the lymphocytes were 42 per cent. and the polymorphonuclears 55 per cent. The comparatively high polymorphonuclear count at the first examination with an active bronchitis will be noted, also the gradual resumption of the proportions normal to the age with the disappearance of the bronchitis. The child never developed pertussis.

11. Churchill: Boston Med. and Surg. Jour., 1903, vol. cxlviii. p. 692.

CASE 2.—Another case was that of a mother whose child was ill with whooping cough. She developed a severe paroxysmal cough without apparent cause. Her blood at the end of a week was as follows:

Total leucocytes	10,500
Lymphocytes	34.6 per cent.
Polymorphonuclears	63 per cent.
Eosinophiles	2.5 per cent.

Her cough subsided in about a week.

CASE 3.—A child, aged 6, whose brother had pertussis began to cough slightly; after about a week her blood was as follows:

Lymphocytes	39 per cent.
Polymorphonuclears	55 per cent.
Eosinophiles	3 per cent.

She never developed pertussis.

Evidently the blood in those conditions most likely to be confused with whooping-cough, does not show a lymphocytosis. In the absence of the phenomenon in those conditions, and its almost constant presence in pertussis itself, the opinion seems warranted that its presence is a factor of great diagnostic value.

COMPLICATIONS.

The effect of complications such as pneumonia on the blood picture, has not been studied in sufficient detail to warrant conclusions. Fröhlich[1] is of the opinion that complications have no effect. DeAmici and Pacchioni[3] found pneumonia in 4 of their cases, the counts being as follows:

Age in years.	Percentage of Lymphocytes.	Percentage of Polymorph.	Stage of Disease.
2	42	56	Catarrhal
2	68	32	Paroxysmal
1	56	43	Catarrhal
	19	80	Stage of decline

The most significant case is the last with a reversal of the leucocyte formula in the stage of decline resulting in high neutrophile count.

My own cases with complications are only 4 in number, as follows:

Age.	Percentage of Lymphocytes.	Percentage of Polymorph.	Stage of disease.	Complication.
6 mos.	30	69	Late.	Varicella, pustules
8 mos.	38.5	62	"	Bronchopneumonia
3 yrs.	33	62.2	"	Gonococcus vaginitis
17 yrs.	33	66	"	Lobar pneumonia

The predominance of polymorphonuclears in all cases will be noted. Cabot[7] and Steven,[8] on the other hand, both report cases of undoubted pertussis with bronchopneumonia which show a high lymphocyte count. Evidently the effect of complications on the leucocyte formula must be left for future investigations.

It will be observed that in this study I have used the term lymphocyte and have not attempted to differentiate between large and small cells of this type. There can be no doubt that a difference between these does exist; but, as there has been no uniformity of classification among the authors quoted and as the personal equation enters so largely into what constitutes large and small, it has seemed to me simpler to group the two varieties under one head, combining the total percentages in those cases which authors have differentiated into large and small. *Apropos* of this general subject Cabot[7] discussing the terms "lymphocytes proper" (large or small) and the other "large mononuclears cells" says: "As no clinical importance has ever been attached to the so-called large mononuclear cells, and as they make up in the great majority of cases but a few per cent. of all the leucocytes, it seems to me best at the present time to include them for practical purposes within the lymphocyte group." So far as the cases in my own clinic and my private practice are concerned there was in all cases a marked predominance of undoubtedly small cells.

TECHNIC.

The usual Thoma-Zeiss instrument has been used in my work in making total counts. In staining, Ehrlich's, Jenner's or Wright's stain has been used. I have been particularly fortunate with Wright's stain. No heating is required, the process takes but little time, is very simple, and can be done by one's office assistant. When the leucocytosis is very marked no total count is necessary for one who has had considerable experience in blood work, as he can tell from the dried specimens that a leucocytosis is present. This is of great advantage in working among children where it is often extremely difficult to fill the white counter exactly, as must be done if the count is to be of any value.

I do not wish to appear to advocate careless or inaccurate work in examining the blood of children. It is only when the leucocytosis is extreme that it is safe to dispense with the total count, and then only by one who has had much experience. The undergraduate and the graduate in medicine during the first years of actual practice must use his counter. By constant study of his dried specimens, however, he will gradually learn to measure approximately the degree of leucocytosis and furthermore will learn much more of the blood as a whole than he will from mere total counts either of erythrocytes or leucocytes.

CONCLUSIONS.

1. A general leucocytosis is present in almost all cases of whooping-cough.

2. A lymphocytosis, i. e., an increase in the number of lymphocytes is found in about 85 per cent. of cases at some time during the course of the disease.

3. A lymphocytosis is found even more constantly during the early or catarrhal stage, over 90 per cent. showing the phenomenon at this time.

4. A lymphocytosis is found usually in those conditions difficult to distinguish from whooping-cough.

5. Therefore, the presence of a lymphocytosis in a child with a hard persistent cough is a factor of great diagnostic value. It is also of prophylactic importance inasmuch as it can be utilized to prevent the spread of the disease by leading to the prompt isolation of the patient.

6. The child's age must be taken into account in estimating the importance of the lymphocyte percentage.

I wish to express to Dr. W. L. Baum my thanks for his courtesy in placing at my disposal the work done in his wards, and to my assistant, Dr. Alex. C. Soper, Jr., for much valuable help in the blood examinations.

HOW TO SUTURE THE WOUND IN EARLY OR INTERVAL OPERATIONS FOR APPENDICITIS, SO AS TO SHORTEN THE INDOOR CONFINEMENT TO ONE WEEK.

CLINICAL EXPERIENCE IN PROOF.*

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OMAHA, NEB.

Besides the all-important question as to the dangers of an operation, the next in importance with the patient and friends is the necessary time of confinement in bed and of interference with business and every-day occupations. It is surprising how many people refuse absolutely, or put off from time to time, an advisable operation; although they know from common knowledge that the danger is exceedingly slight, yet they "can not afford the time." Having in many instances known of persons whose procrastination in this direction has cost them their lives, great jeopardy or much unnecessary suffering, I have been following the several recognized surgical procedures in the diseases of the appendix in order to choose for my own guidance the safest and shortest cut toward recovery and a return to customary duties.

Most of the professional grief I have suffered was during the growing period of knowledge by the medical profession and the laity in regard to the time for operation in acute appendicitis. The family physician either did not appreciate operative interference, except as a "last resort," or else did not recognize the meaning of certain ominous symptoms, even of the first few hours, until perhaps during the fatal lull an exploration demonstrated the true condition. The people, of course, had to be educated. The facts about appendicitis remind me forcibly of the treatment of laryngeal diphtheria in the preintubation-antitoxin days. I have tracheotomized more than sixty cases of this kind as a "last resort," this being called for by the physician and family, and the mortality was frightful. When I could get the chance to do an early tracheotomy, a fair percentage of the children recovered. So it has been with appendicitis. To-day with early operation in acute cases and timely operation in chronic and interval cases the disease is being robbed of its terrors; in fact, is rather joked about. Added to what has been referred to regarding a judicious time, an improved technic has done most to save life and shorten convalescence.

THE AUTHOR'S TECHNIC.

I will briefly describe what has been to me a most satisfactory technic in operating within the early hours of mild attacks of acute appendicitis, and in all cases between acute attacks, i. e., during quiescent periods, as well as in people, subjects of those indefinite, not always well-defined symptoms, sometimes simulating stomach trouble, indigestion and colic. It would be a waste of time to attempt a description of all of the different technics advocated for the operative treatment of the class of cases under consideration, as everybody is more or less familiar with them.

The Incision.—In the first place it should be distinctly understood that the abdominal wound must never be closed without providing for dependent drainage in any form of appendicitis, unless the operator knows that the inflammatory process has been confined within the appendix. I have been experimenting somewhat so as to determine for my own action what incision will best accomplish the desired end, i. e., removal of the appendix, and how to close this incision so as to admit of the earliest getting up and return to every-day habits. The incisions employed have been that through splitting the right rectus abdominalis muscle; the vertical incision behind the rectus advocated by Kammerer and others, and the McBurney incision, sometimes modified when more room was required, as recommended by Weir and Harrington.

Because this latter incision gives the nearest approach to the appendix and affords sufficient room for the intra-abdominal technic in about all cases which should be closed without drainage, and because this incision can be closed so that hernia is absolutely not to be expected, and the patients are up and out and in many cases at

* Read before the Sioux Valley Medical Association, Sioux City, Iowa, Jan. 19, 1906.

work after seven days, I now employ it and give it preference.

Suturing Material.—In order to simplify matters to this extent it is essential to use proper suturing material and so to introduce the sutures that at the end of the time specified your patient will surely be free from all complications. For this operation catgut is the only suturing material used. We are all prone to change our suturing materials too often, using perhaps within one year catgut prepared after several methods. When a catgut is found which, when prepared, is sterile, strong and easy to handle, the first essentials are at hand. When a wound requires anything greater than very slight tension in its closure, catgut is not the material for its closure. Some wounds, of course, require longer time than others in their repair, because of the different natures of the tissues brought into contact. An example of this is when in operations for the radical cure of inguinal hernia the internal oblique muscle is brought into close contact with Poupart's ligament, or again when heavy flaps are approximated and need strong support until Nature's repair has taken the weight off the supports. Catgut when used under such circumstances must be slower of absorption and, therefore, of large size or a chromatized material is employed. I use a cumolized gut and in the closure of a McBurney incision use two sizes, Nos. 1 and 2; No. 1 in children and in all reasonably thin adults; No. 2 in the heavier walled individuals.

Method of Suturing.—The wound is sutured from peritoneum to skin, inclusive, by a one-string continuous stitch. Commencing at the inner angle, the peritoneum is closed by a simple continuous or button-hole stitch. When the outer angle is reached, the needle (a full curved, round one, spear pointed) is passed from below upward through the transversalis and internal oblique muscles, the needle emerging one inch outside of and above the outer angle of the separation in these muscles. This manipulation pulls the closed and puckered wound in the peritoneum above and somewhat outside of the line of the cleft in the muscles. These muscles are now closed from without inward by a few deep (including all muscle) continuous stitches. Unless the suture brings the wound in the muscles nicely together, it is always better to approximate it more accurately by bringing the gut back to the outer angle as a superficial continuous stitch passed sufficiently deep to accomplish the object.

If the deep continuous stitch through the muscles has sufficed, the needle is passed from the inner angle of this closure superficially through the internal oblique muscle downward and brought out at the lower angle of the wound in the fascia of the external oblique muscle. This fascia is then closed either by a simple continuous stitch from below upward, which I prefer, or else the fascia may be made to overlap and in this way give firmer support. I think this overlapping of the fascia is unnecessary, but I sometimes employ it as a variation. If the superficial stitches in the internal oblique have been added to the deep stitches, the needle is passed superficially through the internal oblique muscle from the outer angle of the muscle wound to the upper angle of the wound in the external oblique, and this latter is closed from above down by the same methods as just given. I close the skin with either a compound button-hole stitch or else by a subcuticular stitch. For the former the needle is passed from within so as to come out opposite the angle of the wound and about ¼ to 1/3 in. away, and from this point the continuous suture which definitely closes the wound begins. For the subcuticular stitch the needle is brought out in the angle of the wound and the start made at this place; the final knot is tied within the opposite angle. The whole procedure from the commencement of the operation to the closure of the wound takes from eight to twenty minutes, according to the difficulties found within the abdomen and the thickness of the abdominal wall.

No. 1 plain catgut, Van Horn cumolized, can be brushed off the skin in five days; No. 2 in six or seven days. For years I had been sending my uncomplicated appendicitis cases home in ten to twelve days after operation, and have yet to see or hear of a hernia resulting. The active demand for beds emboldened me to look for a shorter confinement of my patients. After fixing on the technic briefly detailed as the most appropriate for the purpose, I have selected 61 cases as suitable, and except 5 who were detained several days because of complications independent of the operation, as bronchitis, diarrhea, etc., all have been discharged on the sixth or seventh days following operation, many being at home, perhaps fifty to one hundred and fifty or more miles away, one week from the day they left home. In cases of several farmers, I have known of their being at work on the farm on the seventh day.

RESULTS OF EXPERIENCE.

Put a well person in bed and keep him there and insist on his lying very quiet; keep this up for seven or eight days, and then tell him to get up, and see how he will wobble. My practice is to allow all of my simple appendicitis cases to suit their own comfort and desires as to the position in bed after the bowels have been made to move, i. e., forty-eight hours following the operation. There is no reason why these people may not leave the hospital on the fifth, sixth or seventh days, and it is my practice to send all such uncomplicated cases out of the hospitals on the seventh day.

I would not hesitate to allow a patient with an ordinary case of appendicitis operated on as described to travel to his home three days after operation were there any very important reason for such a course. The worst to be feared might be a little parting of the skin edges, and this can not happen if the wound is made secure from the bottom to top surface. And why not? The people for whom I would recommend the employment of the technic described are "walking cases." Many are not at all ill, but are suffering from somewhat debilitating or uncomfortable symptoms of a more or less chronic type or of a recurrent, sharper nature. If the symptoms of inflammation in the appendix are acute they must not be severe or of more than a few hours' duration if the McBurney incision is to be employed. If, after making this incision, evidences of infection outside of the appendix are found, the real and only safe work must be done through a vertical incision near the median line. Whenever the incision advocated is proper, the usual fair physical condition of the patient and the short anesthesia required make the affair, from a surgical standpoint, of little moment. The intra-abdominal repair is safe in forty-eight hours. I have done the McBurney incision in hundreds of patients, a few of these being pus cases, but it is a dangerous incision for this latter class even in the hands of the most experienced.

It would not be proper not to admonish against any one making light of a surgical operation. The safeties we are able to surround our patients with to-day are

very different from those of years ago, and seemingly wonderful things are done, yet in spite of all our modern science and art we still have the same old man to deal with, and he may have idiosyncrasies and defects not easily, if at all, discoverable until the unexpected happens.

No one who has not suffered from having one or more of what Sir James Paget called the "calamities of surgery" occur in his professional experience can fully appreciate the dangers he is apt to encounter. As a warning I would emphasize that many, if not all, of these calamities follow sins of omission or commission on the part of the professional attendant.

TRANSMISSION OF BUBONIC PLAGUE BY SHIP RATS.

AUGUST STRAUCH.

CHICAGO.

I made a voyage from Austria to Brazil in 1901 on the steamer *Gundulic* under the worst conditions imaginable. On the first night after leaving the Austrian harbor of Trieste the sight of numerous rats astonished me. A few days later we arrived at Alexandria, Egypt, which then was plague ridden. While there we were in quarantine, that is, without any direct communication with the land in order to avoid troublesome measures in other ports. We took no merchandise, except some provisions which were hauled on board with ropes in baskets and dirty sacks from barges.

After a stay of several days we left for Tangier (Morocco), St. Vincent (Cape Verde Islands) and Pernambuco (Brazil). When we approached the warmer climate I noticed that the noise made every night by the rats grew less and finally ceased. After we left Pernambuco for Rio de Janeiro, our cook and the steward became ill with foudroyant symptoms of fever, adynamia, headache and vertigo, a syndrome which did not permit of a definite diagnosis. The next morning both patients presented very painful swellings of the right crural lymph glands.

In the cook the swelling increased very rapidly and spread to the iliac glands, which in four days were of the size of two fists. The surrounding tissues and the skin were hard, infiltrated and reddened, similar to erysipelas, so that the whole looked like an appendicitis tumor ready for perforation. After six days the patient died and was buried at sea. At a postmortem incision of the swelling a hemorrhagic gelatinous infiltration and edema of the panniculus adiposus, the periglandular tissues, with partly necrotic glands were found, but there was no suppuration within the reach of the section.

In the steward it was interesting to find the port of entrance of the pest bacilli in the form of a small hemorrhagic spot much like a flea bite on the second toe of the right foot, which changed under my eyes in a few hours to a blood blister of the size of a lentil. Pest bacilli could be found in its contents. The bubo was only of moderate size and contained numerous plague bacilli almost in pure culture. This patient recovered.

From the occurrence of the primary bubo, as well as from the plurality of the cases, I was able to recognize the character of the disease, especially as I had had an opportunity of studying it in the plague hospitals of Bombay in 1900 and 1901. I made further inquiry among the crew, in order to determine the source of this outbreak which occurred fully one month after our leaving a pest-ridden harbor. This revealed the fact that as early as six or nine days, or may be longer, before the outbreak of the disease the sailors had noticed dead rats or sick rats in groups.

In spite of the numerous rodents on vessels, dead rats are rarely found, and then only in the remotest hiding places and always singly, never in groups, because the live ones eat them immediately. In our case evidently too many had died to be eaten by the surviving rats.

I learned that the cook repeatedly removed corpses of rats with his fingers and, holding them by the end of the tail, showed them in sport to the other men. About three days before he fell sick he had with his bare feet killed two rats that had been dying with convulsions.

My researches, therefore, fully explained the cessation of the nocturnal noises. Every day during our voyage from Pernambuco to Rio de Janeiro new dead rats in groups or singly were found and thrown overboard by means of long fire tongs or wooden sticks. Prophylactic measures were instituted. The places where dead rats were found were carefully disinfected. The patients were isolated. The daily routine work in the hull of the steamer was stopped altogether or reduced to the indispensable minimum necessary to manage the ship. Nobody was allowed to sleep in the magazines of the hull because of the many rats. As a result of these precautions no new case of plague occurred, not even at the period of greatest danger of infection, when the epizootic among the rats reached its highest point.

The most efficient and prompt measures were taken after our arrival in quarantine at Rio de Janeiro; the crew was immunized with Yersin's antiplague serum; the rats were exterminated by sulphuric vapors; the whole boat was repeatedly disinfected, almost with the accuracy employed in an operating room. Nevertheless, during the first days of our stay in that harbor, we continued to find rats which had died from plague and not from the effects of the sulphuric vapors.

It became evident that it would be difficult to eradicate all the rodents while the cargo was still on board.

After a while the crew became indifferent to the rules of personal prophylaxis and two more cases appeared twelve and thirteen days after the immunization with antiplague serum.

Among the cargo a number of more or less mummified rats were found again, and the fact that in both men the primary bubo developed in the axilla showed that they had become infected while handling the goods, which evidently were soiled with excretions of the sick rodents. The men did not wear gloves to protect themselves against infection, as they had been instructed to do.

The older patient had a number of lesions in his right palm, presumably the port of entrance of the plague bacilli; in the next five days a bubo of the size of almost a hen's egg developed in his right axilla. The fever, however, was not high, and after the second day of his illness he felt comparatively well. A microscopic specimen of the juice of the affected glands showed a few typical plague bacilli.

The second patient was under my observation only 48 hours. He had an extremely painful, somewhat swollen lymph gland in the right axilla many hours before the onset of fever or other general symptoms. A plague carbuncle developed very rapidly with a large, flat, partly hemorrhagic multilocular blister. Plague bacilli which showed numerous forms of degeneration were

found in the juice of tissue taken from the hard, infiltrated base of the carbuncle. Cultures as well as inoculations were positive.

The patients were taken to the plague hospital of Rio de Janeiro, where both recovered.

I am convinced that the peculiarly mild course which the disease took in the last two cases, notwithstanding the fact that cases are more fatal in which the buboes are located in the axilla near the center of circulation, must be ascribed to the use of the preventive serum.

There can be no doubt that the plague virus was carried to our steamer in Alexandria, although no direct communication with the land took place. The entrance of an infected harbor rat into the steamer, thereby transporting the virus to the numerous ship rats, I consider very improbable. I believe the provisions hauled to the ship in dirty sacks and baskets were the sole cause of the outbreak.

In case of plague the rats on board ship are a menace not only to the ship, but also to the ports at which it touches, because the pest-infected rodents soil the whole ship and the merchandise with their excretions, and in this way they are likely to transmit the bacilli to the rats of the harbor, for the harbor rats sniff at and gnaw the goods, especially eatable ones, and may eat the dead, plague-infected rats of the steamer.

HISTORICAL REVIEW.

That epidemics of pest are very often preceded by an enormous death rate among rats and mice laymen seem to have known for ages.

In Hindustan and Uganda and in other endemic plague foci, when rats come out of their hiding places and die in large numbers, a panic is created and the people leave their homes forthwith.

Rats may often have been the cause of single cases as well as of epidemics of plague, the origin of which could be explained in no other way. This applies particularly to cases occurring in harbors and especially in docks where the propagation by means of men or their baggage was excluded, but where navigation in some way played an important part in transmitting the disease. This method of transmission of plague may have been operative in many cases of outbreak of the plague on vessels long after leaving an infected port. Owing to the small power of resistance of the plague bacillus to dryness and heat, the direct importation of the pest through primarily infected merchandise is at present considered improbable, especially after a long voyage in tropical and subtropical latitudes. In such cases, therefore, the transportation of the bacilli must be assigned to an agent which can increase and preserve the virulence of the virus.

Pest affecting a limited number of rats having free communication among themselves would destroy them all in a short time on account of the great susceptibility of these animals to plague infection. On board ship, however, where the animals can not come in contact with each other so easily, especially when they are partitioned off in different separated parts of the hold, an epizootic may progress more slowly and last for weeks, finally transmitting the disease even after a long interval from one remote port to another. Since the discovery of the plague bacillus real proof of this fact has been established. For instance, the German government sent a commission to investigate the epidemic of plague which seized about 90 persons in Oporto in 1899. It was found that an epidemic of pest had killed many rats in the docks and their surroundings before the outbreak among the population occurred. The rats were either directly infected from the rats of a steamer or through merchandise which had become soiled with the excrement of plague-infected ship rats. A similar experience was reported by Kitasato in Kobe, Japan, in 1899, another in Sydney in 1900. Under favorable conditions the disease may remain confined to the rats. A number of dead rats, for instance, were found when the steamer *Rembrandt* returning from Smyrna in January, 1901, discharged its cargo in Bristol. The cadavers contained virulent plague bacilli; yet the disease was not communicated to men.

The steamer *Pergamon* returned to Hamburg January, 1901, from a cruise in the Mediterranean, and dead rats in groups of five or six were found between bales of merchandise. The number of rat corpses aroused suspicion. The bacteriologic examination which was ordered by the board of health showed that the rats died from bubonic plague. The merchandise was partly burned, the rest carefully disinfected, as was also the entire steamer; the rats were all exterminated, and in this way an infection of the rats in the dockyards and harbor and possibly among the inhabitants was prevented. No case of plague among the crew had occurred.

From such experiences it is evident that for international trade international quarantine rules ought to be made, demanding as one of their principal points systematic extermination of the rats on board with sulphur dioxid, carbon dioxid, carbon monoxid, traps, poison or a sufficiently virulent culture of Danysz's bacillus, while the ship lies empty at its terminus. The same should also be attempted with dock and harbor rats.

The Australian and Turkish governments have already included similar requirements in their quarantine regulations. Infected merchandise must be burned or very carefully disinfected; valuable goods which will not stand disinfection must be kept in an isolated place inaccessible to rats until the virus has entirely lost its activity.

1201 Irving Park Boulevard.

THE TREATMENT OF ARTHRITIS DEFORMANS WITH THE ROENTGEN RAYS.

A PRELIMINARY REPORT.*

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AND G. F. PFAHLER, M.D.
PHILADELPHIA.

We submit this preliminary report on the treatment of arthritis deformans with the Roentgen rays, and hope at a later date to make a more complete report on these and similar cases and then to be able to draw more definite conclusions.

CASE 1.—Mr. T. J., aged 47, a miner, was admitted to the wards of the Medico-Chirurgical Hospital under the care of Dr. Anders Oct. 26, 1905. The man's father died of miner's asthma, otherwise the family history is negative. His previous medical and social history have no bearing on the disease.

Present Illness.—This dates from July, 1902, when his feet, especially the joints of the toes, became swollen, tender and painful. This kept him from work one year; he then improved and was able to work four months. Since that time, which was fifteen months before admission to the hospital, he has

* Read before the Philadelphia County Medical Society, March 14, 1906.

not worked on account of the stiffness, swelling, tenderness and pain in his joints. Four months before admission his left wrist became swollen, tender and painful. Soon after this the left elbow and shoulder became similarly affected, and the joint movements became more and more restricted with the advancement of the disease. At the time of admission he could not, by his own power, raise his left arm from the side. It could, however, by passive motion, be raised half way to the level of the shoulder.

Physical Examination.—This showed the left shoulder to be larger than the right, and tender and painful when passive motion was attempted. The pain seemed to be confined to the joint. No crepitation could be elicited. The left elbow was tender, and somewhat stiff or partially ankylosed, but not swollen. The left wrist joint was tender, stiff, painful and swollen, and the periarticular tissues were infiltrated. The fingers of the left hand showed a tendency to bend backward and outward. The joints of the right upper extremity were normal. The feet were deformed, the toes were bent strongly outward, and the ankles were swollen and tender. The phalangeal and metatarso-phalangeal joints showed great restriction of movements. The knees showed a little joint rigidity, otherwise nothing abnormal.

The general examination showed some emaciation, an emphysematous chest, and more or less general atheroma of the arteries, otherwise there was nothing abnormal.

Radiographic Examination.—This was made Oct. 31, 1905. It showed particularly decalcification of the bones of the wrist joint, with erosion of some of the joint surfaces, and an exudate into the joint spaces. The elbow showed a similar decalcification, with some exudate into the joint space, and a roughening of the tip of the olecranon. The shoulder showed a similar condition.

Treatment.—In order to rule out any constitutional effect only the joints of the wrist, elbow and shoulder of the left side were selected for treatment. The arm was bent in such a way that all of these joints were brought into the field of exposure at one time. The man was treated three times a week, with a medium tube, at a distance of fifteen inches, with about one milliampere of current going through the tube. Each treatment lasted about fifteen minutes. Treatment was begun Nov. 14, 1905. After the first treatment he had less pain. After the third treatment there was distinctly less stiffness. The diminution in pain and stiffness continued progressively until at the end of about one month, and after sixteen treatments, the joints of the left upper extremity were practically well. While at first the patient could not raise his arm from his side he then could touch the ear on the opposite side of the head. He could raise his left arm to within two inches as high as the right, and he could reach around his back nearly as far with his left hand as with his right. The wrist improvements were normal.

Second Radiographic Examination.—This was made Dec. 11, 1905, less than one month after beginning *x*-ray treatment, and showed a decided approach to the normal.

Third Radiographic Examination.—This was made Feb. 27, 1906, nine weeks after discontinuing the treatment and showed only very slight difference in the joints of the two sides.

Internal Medication.—With the *x*-ray treatment sodium iodid was given internally, and massage and passive motion were given locally. While at the end of about a month the joints of the upper extremity had practically recovered, the joints of the lower extremities, which had not been treated with the *x*-ray, showed no change, which seems to indicate that it was neither the constitutional treatment nor the massage and passive motions in themselves that produced the results.

Treatment of Lower Extremities.—Since December 19 the joints of the lower extremities have been treated. There has been the same diminution in the amount of pain and stiffness, but the improvement has not been so well demonstrated as in the upper extremity, probably because of the marked deformity of the feet. At the end of a month, however, the man was able to sew up the cuts he had made in his shoes to make room for his feet nearly a year previously.

CASE 2.—Mr. O. G., aged 53, was admitted to the wards of the Medico-Chirurgical Hospital under the care of Dr. Daland. The family history is of no importance. Since 1890 he has had painful joint affections, short in duration, and with only one joint affected at a time, several months elapsing between attacks.

Present Illness.—This began in August, 1903, with pain, swelling and stiffness in the left ankle and instep. After four months the pain and swelling began to subside, but the soreness and stiffness remained. In June, the right knee, and in September, 1904, the left knee became similarly affected. The left knee continued to grow larger and more painful until admission to the hospital.

Physical Examination (Notes by Dr. Robertson).—This showed briefly a man older in appearance than his years; tendency to sweating; the right pupil a little larger than the left; the gums and teeth in bad condition; some wasting of the shoulder girdle and upper arm muscles. Both wrists, ankles and both knees more or less swollen and ankylosed. There was considerable synovitis of the left knee joint. The chest and lungs were emphysematous, and the heart showed a weak myocardium.

Radiographic Examination.—This was made Jan. 2, 1906, of both wrists, both knees, both ankles and showed in general the changes more or less characteristic of arthritis deformans, viz.: decalcification of the extremities of the bones, an exudate into the joint, erosions, or bony outgrowths of the bones, and actual deformities. In addition, this case showed marked atheroma of the arteries about the ankles.

The left knee, which gave the patient most concern, and which alone was treated, showed in particular distinct enlargement, an exudate into the periarticular tissues, an elevation of the patella by the fluid which was seen to fill the entire synovial sac. The patella showed a distinct exudate, which appeared to be beneath the periosteum on its anterior surface, and a more or less irregular exudate on its upper and posterior surface. The joint surfaces of both the femur and the tibia were eroded.

Treatment and Result.—The left joint alone was chosen for treatment because this was the one that most annoyed the patient. At the time of beginning treatment the knee was in a semiflexed position and could neither be extended nor flexed, and was very tender and painful.

The technic of the treatment was similar to that described in connection with the first case. After ten days and four treatments the pain had nearly subsided and the man could move the joint much more freely. After five weeks and fifteen treatments he was able to walk out of the hospital (at first he was bedfast). He has been able to go back and forth for treatment. There was an interval of three weeks in the treatment on account of a misunderstanding. During this time his pains slightly increased. In this case, as in the first one, massage and passive motion were given in conjunction with the *x*-ray treatment. A radiographic examination at this time showed a diminution in the periarticular exudate, and only about one-third of the exudate in the synovial sac.

We were led to investigate this treatment by the very excellent report made by Moser[1] on the treatment of gout and rheumatism with the Roentgen rays. His first case was reported in 1904.[2] This case began as an acute attack of gout, affecting the great toe. At the time of beginning treatment, however, seven years later, the patient presented the characteristics of general arthritis deformans. The disease had for a long time been at a standstill. A radiographic examination of one of the knees seemed to excite an acute attack, which subsided very promptly. This led Moser to repeat the exposures. At first each exposure was followed by acute pains; later the pains subsided; and then the joints became more mobile.

Moser's last report is based on the treatment of six cases of gout and six cases of rheumatism. In all good

1. Forts. auf dem Geb. der Röntgenstrahlen, vol. IX, No. 1, Aug. 29, 1905.
2. Centbl. f. Chir., 1904, No. 23, p. 712.

results were obtained. Some of the cases of gout were treated during an acute attack with most prompt relief. In the cases of chronic rheumatism the pain, tenderness, swelling and stiffness either disappeared or were much diminished. As early as 1897 Sokolow[3] treated acute and chronic rheumatism in children's joints with the rays with marked improvement.

In 1900 Albers-Schonberg[4] observed marked improvement in cases of gout that had been exposed to the rays.

We believe that this method of treatment is a valuable adjunct in the treatment of these chronic joint affections, but that it is advisable to use massage and passive motion in conjunction with the Roentgen rays. We believe that the rays stimulate and increase the metabolism within the joint, and that this should be taken advantage of, and the massage and passive motion added to assist in the removal of the exudate.

THE COUNTRY DOCTOR.

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A country doctor ought to know what any trained physician ought to know. In order to make a success of his profession he must have a most thorough preliminary education, must avail himself of the advantages of his medical course to the utmost and be determined to improve himself at every opportunity.

His training when he enters on his life's work has simply laid open to his vision a glimpse of its possibilities. His future depends largely on his capacity for work. His savings for years must be reinvested in office equipment. He must embrace the opportunities freely given by the masters of the profession at their clinics to see their work and to learn to a certainty that their success has been by intense application for years along definite lines. Specialism is only a division of labor as practiced by all people as they have advanced through the various stages of development.

The discovery of ether by Morton in 1846 and the theory taught by Pasteur that micro-organisms caused fermentation, amplified by Lister in the treatment of wounds, greatly broadened the practice of medicine, and especially advanced and separated to some extent the practice of surgery from that of medicine.

The acceptance and perfection of antisepsis was of slow growth and gained almost no foothold in this country until Lister's visit to Philadelphia in 1876. Strange as it seems to us who never practiced any other method, the older members of the profession were loath to accept its truths and surgery was taken up by a few men and practiced as a specialty.

About this time Norris and Strawbridge returned from Germany, bringing with them the advances made in the treatment of diseases of the eye, and especially they had gained an inkling of the methods of refraction which were developed, and the oculist soon appeared. It is a fact that nearly all of the headaches just above and back of the eyes are caused by defective vision, and that large numbers of school children go to their physicians and are given headache remedies without end. This is to no purpose, and they finally have to give up school on account of becoming nervous wrecks, unless by chance they happen into some jewelry store and are given some kind of lenses to wear which may relieve the trouble to some extent.

3. Vratsch., 1897, No. 46.
4. Muench. med. Wochft., 1900, No. 9, p. 284.

The country physician, therefore, should take up refraction work. The great mass of working people simply can not pay the fee demanded by the oculists and are forced to put up with the indifferent work of the so-called opticians. Two or three hundred dollars will buy the necessary equipment and a month's work in some eye infirmary will give one a start, and one can do as well at once as any optician will ever be able to do.

A general knowledge of the diseases of the eye will be a help to one in many instances. After four or five years study and practice one will become very proficient and will be enabled to make many people more useful and add greatly to their happiness. Physicians as a class must give more attention to diseases of the eye, as a physician loses standing in a community if he fails to distinguish between a case of iritis and toothache, and a patient is apt to tell his neighbors if some country doctor treats a swollen and inflamed eye for weeks and then calls in a specialist who discovers a wheat-beard imbedded in the cornea.

Before the days of antiseptics, McDowell and The Atlees had boldly invaded the abdominal cavity and Marion Sims had given to the world the speculum. Soon after the advent of antisepsis the surgeon found that women could be mutilated almost with impunity and the era of the gynecologist began, but fortunately for suffering womankind it has passed away.

The great work of Howard Kelly in making plain to the profession at large the technic of plastic work, the advances made by McBurney in the operative treatment of appendicitis, the pathway blazed by the Mayo brothers in surgery of the gall bladder, have made it possible for any intelligent man to do good work and save his patients unnecessary suffering and, frequently, an untimely death.

The well-trained physician needs to recognize that the great question before the people now is this: Can my physician take care of me if I am sick and can he tell me how to keep well, or at least guard me from unnecessary sickness?

A physician that can make a diagnosis of appendicitis with certainty ought to be capable of operating and will give his patient a better chance of recovering than he would have if he waits a few hours longer to be sure of his diagnosis before putting the family to a useless expense of sending to the city for a great man and then waiting twenty-four hours more until he arrives, and perhaps by that time he finds the patient suffering with a general peritonitis.

At any rate a man that can not operate is not a safe person to leave a patient with after he has been operated on. If the case does not do well the great surgeon is far away and can not be had when again needed. If the patient wakes up in the night with every symptom of obstruction of the bowel something must be done and done at once, and it now requires more skill to give the patient the best chance than it did to do the primary operation, and if the country physician lacks experience or is deficient in equipment and does not dare to make the attempt to remove the obstruction, the patient will die.

The public at large would laugh at the physician that sent for the city man to reduce every dislocation or treat every case of fracture that came to him. Think of the worry, the anxiety that a bad fracture of the wrist or of the elbow entails.

Since few cases of fracture should be treated without careful *x*-ray examination, and in most instances must be reduced under an anesthetic, and not

infrequently cut down on and wired, doing an ordinary abdominal section is child's play in comparison, and why should the country doctor be expected to do the one and not the other? If he without question accepts the case of the fracture, which entails, if done in the best manner possible, an expensive outfit, which every surgeon of wide experience dreads, which brings but little credit and almost no pecuniary reward, why not spend the time and learn to do the easy things that need to be done and at the same time bring their rewards with them?

A general practitioner, if he is as capable as he should be, can do almost the same work that any surgeon dare attempt, and his success will be as great and in most instances should be better, for he can give his personal attention to the case.

In too many instances the surgeon must give the after care of the patient almost wholly to some nur e or interne who has had but little opportunity and training. I do not believe, however, that the great operations should be attempted except in an emergency by any but men of the widest experience, as they will be able to do the work in a few minutes less time and by so doing save life. The exercise of their riper judgment would, in not a few instances, save organs that would be sacrificed by the less experienced.

The ordinary practitioner must become more competent or cease to exist. It is proper to be conservative, but that should not serve as a cloak to ignorance. We must be able to do the business that comes to our door, or in many instances it will not be done and the patients will suffer in consequence.

The "patent medicine" evil is no greater humbug than the fake attempted by many so-called specialists who write long articles in the journals on their special subjects, telling how very difficult it is to do their little special line of work—that it requires great skill to make a diagnosis—that a faulty diagnosis leads to faulty treatment and leaves you more in the dark than ever how to proceed; but somehow the impression is left in your mind that you had better send the patient to them, they alone know how to make a chemical analysis of the gastric contents. Don't do it. Just send for the carpenter who owes you for treating his daughter through a long sickness with typhoid and have him throw out a bay window on the side of the office. Equip a laboratory, buy some books and stop loafing. The $300 with which you thought of buying worthless mining stock will equip it nicely, and you will have the means at hand to tell whether your next patient has pernicious anemia or chlorosis, typhoid or malaria, and without these means you can not be absolutely certain. More is now required of the general practitioner than ever before and more is given. Each year people demand more accurate diagnosis and better treatment, and the question is, and it is a live one, where and how are they going to get it? Is the general practitioner going to become equal to the demand, or is the practice to be parceled out to a hundred specialists?

No one physician can do the best possible work in all lines of modern medical practice, but he may do better work in every field and the best work in almost every instance. Constant work in any specialty gives greater expertness along certain lines, and better results ought to be achieved by specialists in some cases.

As we find things to-day the great mass of work done by the specialists is work that should be done at home by the family physician and at far less expense and inconvenience to the patient. We need fewer so-called specialists but more thoroughly trained physicians. They must spend more money for equipment, be capable of making the most thorough examinations, and be prepared to carry out the various methods of treatment necessary to effect a cure.

All honor to the specialist, but hail to that type of practitioner that Carleton had in mind when he wrote these lines:

In the night-time or the day-time he would rally brave and well,
Though the summer lark was fifing or the frozen lances fell;
Knowing if he won the battle they would praise their Maker's name,
Knowing if he lost the battle, then the doctor was to blame.
'Twas the brave old virtuous doctor,
'Twas the good old faulty doctor,
'Twas the faithful country doctor—
Fighting stoutly all the same.

THE NASAL ACCESSORY SINUSES.*

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While affections of the pneumatic sinuses of the skull have been recognized many years, it is only within the last 15 or 20 years that a fuller knowledge of their occurrence and their attendant treatment has become generally known, so that in mentioning the most important recent advances in rhinology the general consensus of opinion will be that diseases of the accessory sinuses, their diagnosis and treatment are the ones to be so considered.

Since those interested in special fields of rhinology have studied the question from every viewpoint, and voluminous essays have been presented which the general practician hardly finds time to read, a brief résumé of the advances made in this line may not be amiss.

The accessory sinuses of the nose, four in number, are the frontal, ethmoidal, sphenoidal and maxillary. These vary in size in different individuals, and anomalous conditions arise where there may be but a rudimentary sinus or even complete absence thereof. Some of these cavities are large single spaces, some have bony septa dividing them, while the ethmoidal sinus is always divided by partitions. All are lined with folds of mucous membrane which are so thin and so closely adherent to the periosteum that the bone is seen shining through. The mucous surface is coated with ciliated epithelium, the membrane is much thinner than that of the nose and there are few mucous glands. The functions of these cavities may be said to be those of resonating chambers for the voice.

The cavities all have natural openings into the nose, and, while these are so situated in some instances as to drain the cavity effectively into the nose, which is notably the case in the sphenoid and frontal sinuses and partially so in the ethmoid, the opening for the maxillary sinus is almost at its very top and hence drainage here can not be accomplished in the natural manner of a drain; that is, from its most dependent point. Some years ago when the treatment of chronic conditions of the maxillary sinuses was under discussion and it was claimed that washing out this cavity was all sufficient for its cure, I protested as to the possibility of an effective drain of a cavity whose opening was in the top. My views were stoutly contested, but since then those who objected make free openings in the dependent part to

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cure their patients, and to-day we hear no more of those objections. The openings will be demonstrated in the description of the various sinuses.

ANATOMIC STRUCTURE OF THE SINUSES.

Taking the largest of the sinuses first, the maxillary, we find it somewhat pyramidal in shape, with its base formed by the floor of the orbit and apex over the roots of the molars. Its lateral wall is at the nasal chamber; its posterior wall is formed by the body of the superior maxilla. The anterior wall, over the canine fossa, is thinnest. The natural opening is near the roof of the cavity and opens into the middle meatus of the nose by the ostium maxillare at the posterior extremity of the hiatus semilunaris. Occasionally accessory openings are found also in the middle meatus. The maxillary sinus exists at birth and forms at about the seventh fetal month. It is well to have this in mind, as we shall revert to this later.

The frontal sinus lies between the two lamellæ into which the frontal bone separates in the region of the superciliary ridge. Its anterior wall is thickest and it is separated from the sinus on the opposite side by a bony septum which may be in the median line, but this is unusual. We frequently find the sinuses of one side encroaching far over on the opposite side, so that one sinus is much larger than the other. The cavity extends upward in the forehead often to a considerable distance, sometimes 1½ inches. Passing downward between the ethmoidal cells the sinus becomes narrow and at its most dependent part, in the middle meatus of the nose, opens into the hiatus semilunaris. The frontal sinus is seldom found before the seventh or eighth year of life.

The ethmoidal cells are in two groups, anterior and posterior, the former opening into the middle meatus, the latter into the superior meatus. They begin to develop about the fourth year of life.

The sphenoidal sinus lies in the body of the sphenoid bone, its anterior wall in part being the ethmoid bone. The orifice of the cavity is in the anterior wall and communicates with the superior meatus of the nose. The two sinuses are separated usually by a septum, but they have been known to communicate. The sphenoidal sinus appears about the seventh year of life.

ETIOLOGY OF SINUS AFFECTIONS.

The most frequent affections of these cavities are either acute or chronic inflammation. While frequently secondary to some nasal affection, they do occur primarily.

Among etiologic factors may be mentioned: Influenza, diphtheria, scarlatina, smallpox, measles, erysipelas and occasionally glanders and gonorrhea. Much has been written as to the etiologic relationship of ozena to accessory sinus disease, and the weight of opinion is that there is such relationship. Among the direct causes of purulent infection in the accessory sinuses may be mentioned galvano-cautery applications, probes and canulas and the misuse of the nasal douche. The practice of dentists of covering teeth with crowns of metal is one of the most frequent causes of sinus affection.

Most of the attacks of chronic suppuration occur as a result of an acute attack. The bacteria found are those that occur in inflammatory products and the pyogenic staphylococci and streptococci, the bacilli of Friedlander and of diphtheria.

The morbid anatomy of these affections is that of a chronic inflammation. There is a round-celled and serous infiltration, polypoid and cystic degeneration, periostitis, rarifying osteitis and caries. Caries may occur in the maxillary antrum. In the ethmoid it occurs frequently, as do also polypus formation and granulating osteitis. The secondary changes occur on the posterior wall in the frontal sinus. While polypi rarely occur in the sphenoid, erosions and necrosis of the anterior wall may occur.

Acute inflammation of these cavities is associated with inflammation of the nasal mucosa, and there may be an acute exacerbation associated with a chronic affection. Together with the symptoms referable to the acute rhinitis, there may be excessive temperature, but the chief complaint is that of pain. This is apt to be of a very severe character, in the brow if the frontal, about the eyes if ethmoidal, in the face if maxillary and in the back of the head if sphenoidal.

The mucous membrane is intensely congested, the middle turbinate swollen and pressing on the septum or there may be a single drop of pus at the site of the natural opening if the affection is anterior. If posterior, there is a congestion of the fornix and anterior sphenoidal wall and mucopus will be observed. Transillumination is so illusory that, while it establishes the presence of pus when a distinct dark spot is found, a negative find is by no means proof positive of its absence. The treatment is rest in bed, moist heat over the seat of pain, passing steam into the nose, washing out the accessory sinus where practicable with a warm antiseptic saline solution, after instilling a 1:5000 solution of adrenalin to which a small amount of salt has been added. It may become necessary to operate for this condition. This will be mentioned later.

Chronic suppuration of the accessory sinuses has perhaps, after all, the most interest to us, for the reason of its greater frequency, the difficulties in the matter of diagnosis, prognosis and the decision for operation and the skill and study required for its cure. The latent form of purulent condition has been fully studied but twenty years, though in 1875 Spencer Watson described it. Many of the members of the American Laryngological Association will recall the early papers by Bryan of Washington on chronic sinus affection and the silence that betokened an unfamiliarity with the subject that followed the reading thereof. To indicate how recent our knowledge is, I believe I was the first to operate on the frontal sinus at the New York Eye and Ear Infirmary, about 10 years ago. As to frequency, it may be said that the maxillary sinus is most frequently affected and the sphenoid least so.

DIAGNOSIS.

The one chief symptom is the presence of pus in one of the accessory sinuses, as indicated by its presence in the nose. More remote conditions exist that eventuate in the discovery of an empyema. Thus the pharynx, larynx, eyes and ears may be affected beside the nose. There may be pulmonary or gastric disturbance, or there may be the loss of general health, of weight and general malaise.

The symptoms most frequently elicited are pain, either a dull pain or severe lancinating one, nasal obstruction, one-sided usually, and a discharge of a purulent character on one side. Given a patient with these symptoms, locating the pain in the region of one or both of the sinuses and that pain constant in character, with the obstruction and discharge mentioned, the diagnosis of probable empyema of one or more sinuses may be readily made without rhinoscopic examination. If transillumination be practiced in a carefully darkened room and the dark spots be found in addition to the

clinical evidence given, the diagnosis becomes still more likely. If subsequent examination reveals pus or masses of polypi in the nose, the confirmation of the diagnosis is at hand.

In the more remote conditions associated with or caused by empyema, the diagnosis must often be made by exclusion, unless, indeed, we may be able to aid our diagnostic skill by examination of the blood. Sinus thrombosis has been so diagnosed, why not empyema here? In children the diagnosis of empyema of the maxillary sinus, the only one actually present, is not difficult in the pronounced cases. In severe forms of nasal diphtheria the bacilli have been found post-mortem. Pearce found them in 36 out of 39 cases. In most cases it clears up without any ill effects; in some a chronic empyema results. I have recorded my opinion on the question of empyema of the antrum of Highmore in young infants and have taken the stand that it is not tuberculosis nor caries, but as distinct an affection as it is later in life.

When chronic suppuration occurs the symptoms are the same in all recorded cases, of which there are about a dozen, I having had one such. There is a fistula under the eye usually discharging pus, ectropion, one-sided purulent discharge from the nose with foul odor and eroded bone.

The use of the *x*-ray is becoming more and more understood both for diagnostic purposes and also for the determination of the exact size and position of the cavities.

TREATMENT.

The diagnosis established, the important question of treatment arises, and here we may well pause, for, while that is the natural sequence of all diagnoses, the many questions that arise must be most seriously considered and weighed. Is it a case for operation or local treatment, and, if the former, how extensive shall it be?

A recent writer, lauding the galvano-cautery, considers needle puncture to be all that may be required. He says: "The needle puncture is not suggestive for clinical display, and hence, as the cosmetic condition is secondary, the external operation is quite naturally resorted to in the clinics and elsewhere as the quickest and most spectacular means for immediate results." The same writer concludes that the negro must be of a lower race than the white man, for the reason that the former is said to have no accessory sinuses. Hence we will not take him seriously.

In acute conditions of the maxillary antrum if the ostium can be found, washing with tepid antiseptic solutions will be of much benefit and may effect a cure. Otherwise a puncture with curved trocar beneath the inferior turbinate into the cavity, together with draining and washing, may be required. In acute ethmoidal or sphenoidal disease the removal of the anterior end of the middle turbinate will permit free drainage. In acute frontal sinus affections it may become necessary to open the sinus from above, connecting with the nose through the infundibulum by a drainage tube.

In chronic maxillary antrum disease we may open the antrum through the canine fossa, then pack and insert a rubber tube which may be left as a constant drain. We may enter the antrum through a tooth cavity, or we may break down the nasal wall after opening the canine fossa. This is known as the Caldwell-Luc operation. The opening of the canine fossa must often be permanent, and the annoyance of a constant taste of pus in the mouth and its commingling with the food is very great; but this may be obviated by making the nasal entrance into the antrum so large that the pus empties into the nose and has even better chance of complete cessation.

About one-half of the inferior turbinate is removed and then, by means of specially devised instruments, the antrum is broken into and the whole wall to the floor of the maxilla is removed. The canine fossa wound is curetted, the edges freshened and allowed to heal. In two severe cases in which I performed this operation the results were very satisfactory. The wound in the canine fossa closed permanently.

Ethmoidal disease is treated by the removal of the anterior half of the middle turbinate, the cells are curetted, and the septa broken down between them.

The sphenoid may be reached by the curette after the middle turbinate has been removed.

For the frontal sinus we have the Ogston-Luc method, which consists of opening the sinus from above and breaking through the infundibulum.

By the Kuhnt method the entire bony wall is cut away and the external parts therein are packed.

Killian's operation consists of making an incision below the eyebrow to the end of the nasal bone, separation of the periosteum, breaking down into the sinus from below and then from above, retaining a bridge of bone between for subsequent cosmetic effect. Entrance into the ethmoid cells through the wound becomes easy and also into the sphenoid.

Coakley operates from above downward and treats the wound by the open method, as in mastoid operations, with excellent results.

The radical operation as performed by Jansen does all this as to the frontal and ethmoidal. He next enters the maxillary antrum through the canine fossa, through the dependent and posterior ethmoids and into the sphenoid. Finally the nasal wall is broken into and the nasal mucosa used to line the cavity. This is sometimes done on both sides of the face. I have never attempted this radical procedure.

The prognosis as to complete recovery in all sinus cases must be very cautiously stated. We may succeed in eliminating the pain and even the discharge of pus, and in their place some new development arises, such as a neuritis over the incision resulting from injury to the exposed nerve at time of operation. At best it will take weeks and months before the last vestige of pus is seen.

Many of the maxillary antrum operations are done in physicians' offices and in public clinics, as are also the middle turbinate operations. As a matter of extra precaution, in a case of ethmoiditis and maxillary antrum disease and in which sphenoidal disease was suspected, I placed the patient in hospital. Under narcosis the antrum was opened after removal of one-half of the inferior turbinate and the middle turbinate was partially removed. The patient rallied well after the operation, but on the fourth day thereafter she developed coma and died, the cause of death being meningitis from a cavernous sinus thrombosis. This case illustrates the danger of considering such operations simple ones and the need of careful procedure, surrounding the patient with every precaution.

The method of removal of the middle turbinate in part, called uncapping, has for its object a free vent of the openings of the various sinuses which lie here.

Much is said of probing the sinuses through the nose. It is frequently impossible. For a successful performance it requires a non-resisting patient, thorough local anesthesia and a large roomy organ.

Some of the operations are followed by disagreeable cosmetic effects, and these are to be avoided if at all possible.

While the chronic cases take much time for their eventual recovery, requiring an infinity of patience on the part of both the physician and the sufferer, the ultimate end is often gained, a complete restoration to health.

OTHER AFFECTIONS OF THE ACCESSORY SINUSES.

While the acute and chronic affections of the accessory sinuses are by far the most frequent conditions here met with, we may have morbid growths, benign or malignant, foreign bodies, mucocele, caries of the bone, injuries, etc.

The morbid growths remain quiescent until forced into the nose, when either by hemorrhage or obstruction our attention is called to them. Malignant growths hereabouts form a chapter of fatalities sad to contemplate. Radical removal is rarely possible, and the recurrence which inevitably happens means most distressing fatality. Operation does give relief for the time and hence is not to be discouraged. The foreign bodies are mainly unerupted or ingrowing teeth.

Mucocele may exist, especially in the maxillary antrum. This may produce a rarefaction of bone so that the nasal wall, the facial wall and the floor over the superior maxilla may disappear, and only the mucous membrane may cover it. I have recently had such a case.

In the ordinary nasal polypi, pressure may interfere with the ethmoid cells and they may become absorbed into one large cavity. The bone-destroying power of this condition is remarkable. In a case recorded by me the vomer and superior maxilla were entirely absorbed from pressure of these mucous polypi.

Caries of the bone, especially of the facial surface of the superior maxilla, may occur usually from violence, and may simulate antral disease.

As illustrating the difficulties in the way of differentiating sinus disease from neuralgia, hysteria and the like, I relate the following:

In consultation with a prominent neurologist, I saw a young married woman from one of our southwestern states who gave the following history:

About two years previous to my seeing her she had pains in her face over the left antrum. These pains were very severe and practically constant. At night they were not severe enough to cause sleeplessness, but in the day they were always present, of a gnawing character, severe during mastication, and preventing her from attending any social duties by reason of their severity. Neuralgia was diagnosed and appropriate remedies were administered with no effect. A visit to a western city for the purpose of consulting a specialist resulted in the expression of an opinion that she had nothing the matter with her, that she should go home and behave herself. Her physical condition became so bad that she prevailed on her relatives to send her to New York to consult a neurologist, who, before expressing an opinion, asked me to see the patient.

She came to my office and required support while walking to the examining room. There was exquisite sensitiveness on the left side, dark spot on transillumination, without a sign of pus. I diagnosed some affection of the bone covering the antrum and advised operation. This was granted and after an incision from the center of the upper jaw to the maxillary ridge and removal of the periosteum, caries of the external portion of the maxillary antrum was found and the whole of this portion was then removed and the wound packed.

She was placed in a sanitarium on the fifth day, made an uninterrupted recovery after a rest cure of five weeks, and gained much in weight. She returned to her home in good spirits. Two years subsequently she remained well.

I feel confident that an early diagnosis and prompt operation would have saved the patient much suffering, to say nothing of the strained relations existing among the members of her family, who at one time believed her to be a malingerer and treated her accordingly.

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TROPICAL NEURASTHENIA.*

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Tropical is used here in the sense of locality more than to characterize any special type of neurasthenia. My object primarily is to call attention to its frequency in warm countries, at the same time touching somewhat on the disease as I have observed it.

Writers on tropical diseases make little or no mention of it. Dana, in his work on "Nervous Diseases," states that it is not infrequent in tropical regions and that it is found in the West Indies. My experience extends over six years' residence in Porto Rico, but information derived from various sources has caused me to regard this condition as one quite general to the tropics, differing in degree through peculiar local influences. From what I have been told by medical men who have resided in the Philippine Islands I judge that it is even more prevalent and more severe there than in the West Indies.

The native of the tropics is not exempt, and in Porto Rico, where the percentage of neurotics is high and functional nervous disorders very common, it is not infrequently encountered associated with hysteria—hystero-neurasthenia. It is far more common, however, to find neurasthenics in the tropics among those who go there from colder countries, hence it becomes a very interesting question to American physicians, in view of the close relations recently established between the United States and Porto Rico, Cuba, the Philippines, etc. My remarks refer particularly to Americans living in the tropics, but the same considerations will undoubtedly be found true of other nationalities under like circumstances.

Comparatively few individuals entirely escape if they live in the tropics for any length of time. In many persons the manifestations are slight and are taken as a matter of course, due to climate. They do not consider themselves really ill, but commonly explain: "The climate is getting onto my nerves." Acute cases are not unusual. Grave ones are more rare, but do occur, and insanity has been known to follow. Some time ago considerable comment was made in both professional and lay press about the unusual number of American soldiers who became insane while serving in the Philippines. Making due allowance for malingerers who wished to be invalided home, it seems safe to assume that many of these men were victims of grave neurasthenia.

In proportion to the number of American women to men in Porto Rico, I have observed a relative greater frequency among the former. Several explanations may be offered. American women almost invariably menstruate more abundantly than in the States. The flow is prolonged and often so excessive as to require urgent treatment. The interval between periods is usually shortened during the first year or so of residence there. We can readily understand that to women accustomed

* Read by title at the annual meeting of the American Society of Tropical Medicine, Philadelphia, March 24, 1906.

to a regular monthly routine such conditions may be all sufficient to precipitate nervous exhaustion.

Housekeeping where customs and language are strange and where servants are inefficient and uncleanly has its thousand and one little difficulties and worries that need to be seen to be appreciated, but which in the aggregate are often sufficient to cause housekeeping to be abandoned, the housewife sent to the States to recuperate, and on return to live at a hotel or boarding house.

Another thing: life in most tropical countries is radically different from that in temperate climes. The lack of accustomed society, pleasures and diversions is more keenly felt by women than men, who have more opportunity to make up the deficiency.

Without excluding the usual causes of neurasthenia, there are some which, in my opinion, deserve special mention when considering this as a tropical disease.

Climate is the favorite scapegoat and receives the major portion of the blame. I believe that its influence is overestimated, though it undoubtedly causes a general atony of all the tissues of the body. Functional activity is decidedly lessened. The energetic American goes the pace according to his previous habit, and while his physical and mental capacities may be able to stand it in the States, it is entirely too strenuous for his new environments. He either drops more or less into the pace of the country or breaks down. What may be normal work in one place is overwork in another. Add to this the mental exasperation and irritation which he feels at the slow, easy-going methods of those with whom he comes in contact.

The officials charged with the construction of the Panama Canal have been suddenly confronted with the problem of providing amusement for their employés. They have come to realize that the need is imperative and vital, and are now spending thousands of dollars to meet it. "All work and no play makes Jack a dull boy."

To our notion, the amusements of tropical peoples are limited and often of a character which does not appeal to us. Customs which are not understood and the inability to speak the language make it very difficult to take an active part in whatever opportunities there may be for diversion. Theaters are few and seldom first-class, except in large cities, and here again we meet the impediment of unfamiliar speech. The benefits of public parks and outdoor sports are rarely attainable. Acquaintances are limited to a small circle, the members of which only too often tire of each other's society. In search of something to relieve the monotony of life under such conditions, there is great liability of drifting into alcoholic or sexual excesses, thus further assisting nervous exhaustion.

As to diet, people from the north fare rather badly. The same articles of food (except in a limited number of private houses) appear from day to day with almost clockwork regularity, while the methods of preparation do not result in dishes which appeal to the American palate. The sameness of it all becomes unbearable at times, and a change is sought again and again. The digestive functions, especially that of the liver, become impaired.

Moderate exercise is essential to health in the tropics, but, unfortunately, one's inclination is decidely averse to it. Almost unconsciously everything is done with a minimum of physical exertion. On the other hand, too much or too violent exercise may be more harmful than none at all.

The degree of neurasthenia is slight or moderate, exceptionally, severe. The patient first notices that he is less energetic. He feels fresh in the morning, but soon tires and at night feels worn out, apparently without sufficient cause. He becomes ill-natured, peevish and irritable, taking offense at small things which under ordinary circumstances would not be noticed. Mole-hills become mountains; proper attention can not be given to business; urgent matters are put off from morning till afternoon and from afternoon till next day. It becomes almost impossible to concentrate the thoughts on details or to plan for the future. Memory and the ability to reason may be at fault.

There is a decided tendency toward hypochondriasis, morbid introspection which distorts unimportant pains and ill feelings into supposed initial symptoms of some dreaded disease. The fear of impending disaster or death may render the patient's life miserable, even when he knows that there is no reason for such fear.

The appetite may fail and digestive disorders may arise or grow worse if already present. Loss of weight may result. During a moderate attack I lost about fifty pounds in three months. Sleep is troubled and unrefreshing. Dull, annoying headache is of almost daily occurrence, and, as a rule, is occipital, sometimes frontal if there are visual defects.

True anemia is not a prominent feature, although there is a very deceptive anemic appearance encountered, especially among women who are neurasthenic. I have repeatedly been asked to examine the blood of pale subjects without ever finding any marked reduction of the hemoglobin, unless due to some cause more than the nervous affection. Vasomotor disturbances most probably give rise to this pseudo-anemia.

Neurasthenia in the tropics presents the same great variety of symptoms as elsewhere, and I have only mentioned those which have struck me as specially marked. In slight cases improvement occurs readily or the patient recovers completely when the cause can be removed or its influence counteracted by change of scene or occupation. Proper and regular exercise, particularly if amusement can be combined with it, proves very beneficial, but it is easily overdone.

The symptoms may disappear gradually and the patient recover spontaneously as he becomes more accustomed to his new life and environment; we may say acclimated. The time necessary for this depends on the adaptability of the individual. It may be months or years. Some persons could never do so.

I have had little success with medicinal treatment, unless combined with hygienic measures. Prominent symptoms may require special medication, but the specific medication by drugs designed to act directly on the nervous system will too often prove disappointing.

ETIOLOGY OF DEMENTIA PRÆCOX.

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A number of articles on this subject have appeared lately in the medical press, setting forth the general proposition that dementia præcox is a disease due to autointoxication. The arguments of the writers have been backed up by the results of chemical analyses, which, in many instances, have been gone into in great detail and very exhaustively.

It seems to me that the chemists have gone to great lengths to find a cause which is right at hand and, further, that they have been singularly short-sighted

in their reasoning. Their results have been obtained from the examination of cases acknowledged to be dementia præcox, and because they have found changes in the blood and secretions from which they can argue the development in the body of autotoxins they have presumed these autotoxins to be the cause of the disease. If these chemical changes had been found before the development of the clinical picture, then there might be some good reason for considering the changes found as causes, but, being only found after the disease is established, it is incumbent on those who claim these to be causes to show why they may not be effects.

We find dementia præcox developing typically at the period of puberty and adolescence in persons preferably of marked hereditary taint and under all conditions of environment. It always has been regarded, and I see no reason why we should change our minds now, as a psychosis of the developmental period dependent on defective cerebral and corresponding mental evolution. It is certainly on its face, and is generally acknowledged to be, a mental disease, and the burden of proof, it would seem, should be on those who claim it to be a disease of tissue metabolism.

Now it seems to me that just what would most naturally be expected is true; that is, that these changes which are found in the secretions are the results of disturbed tissue metabolism due to the disease and not indicative of the presence of toxins which are to be regarded as causative factors.

The failure to consider this very manifest explanation of the conditions found is due perhaps to the lack of a profound appreciation of the intimate relations between the nervous system and the other organs of the body and the very common occurrence of bodily disorders associated with the psychoses and, very probably, due to the same underlying conditions—disease or disorder of the nervous system.

This is a subject which has been much written about even from early times, but perhaps because the physical changes are not relatively gross as in pneumonia, nephritis, valvular heart disease, it never seems to have been taken seriously, but to have been considered by many as largely academical. It seems to have been hard to conceive of any necessary bond between the physical organization and the mind. Recently, however, this connection is being more emphasized and we find Mercier,[1] in his latest work, speaking of insanity as a disorder "not of this or that organ, or tissue, or part of the body, as are the diseases which come under the purview of the general physician or surgeon, but of the whole individual who is the subject of the disorder."

The body is made up of a great number of organs, each one of which has a definite function: The kidneys to secrete urine, the lungs to carry on respiration, the heart to force blood through the vessels, the stomach and intestines to digest and to absorb nutrient. Definite as is the function of each one of these organs, its action must be timed in response to certain conditions and in relation to the other organs of the body, or it does not serve its purpose in the individual economy. The stomach must secrete its juices when food is introduced, the bladder must contract when there is urine to be expelled, the active brain must be supplied with an increased amount of blood, the kidneys and the skin must act harmoniously together to excrete certain substances, the respirations must increase on physical exertion, and so on indefinitely. Now it is the duty of the nervous system to see that the functions of the several organs are rightly timed and properly adjusted in relation to one another. This is the function of the lower nerve centers.

The highest nerve centers of the cerebral cortex that constitute the physical substratum of mind have quite a different function. Their duty is to initiate, to regulate, and to control the separate actions of the individual so as best to serve his interests in his relations with his environment, in other words to bring about an adjustment of the individual to his environment.

Referring to these, we may say, contrasted functions of the nerve centers, Mercier[1] sums up by saying (p. 83): "From the foregoing general account it appears that what is primarily disordered in insanity is believed to be the working of the highest regions of the brain; that the primary function of these regions is to determine and to actuate conduct; that a subsidiary function is to harmonize and to govern in a general way the bodily function of nutrition, or repair and waste of the tissues; and that the operations of mind are associated with the working of these regiona in such a way that, when the mind is disordered, the bodily functions also are deranged."

Tomlinson[2] takes the same position in a recent paper, which he writes to defend the thesis that: "There can not be special change in an organ without general disease in the rest of the organism, and in the study and treatment of the special condition, the general involvement and its extent are most important."

This paper of Tomlinson's was based on 2,366 cases admitted to the St. Peter State Hospital in Minnesota from Jan. 1, 1894, to Jan. 1, 1904. An analysis of the cases shows "practically all these patients were suffering from some kind of physical disease, most commonly malnutrition, perversions in the digestive processes and interference with the process of elimination."

These physical disturbances were manifested by disturbances of reflexes, tremors, impaired nutrition, constipation, renal inadequacy, changes in the urinary secretion and in many other ways. In the main, these physical disorders that were found associated with the mental diseases would be described as minor departures from the normal and many of them would undoubtedly have escaped discovery but for the systematic application of laboratory methods of clinical examination.

Now while physical disease, an attack of one of the acute infectious fevers for example, may be the determining cause of a psychosis, the character of physical disorder here referred to is such, at least in degree, as every one suffers from many times in the course of a lifetime. It could hardly be supposed, therefore, that physical disorders of such magnitude would produce insanity in ordinarily stable persons, although it may perhaps be conceivable that in very unstable individuals, the strongly predisposed, they might. Even granting this, the real cause after all would lie in the nervous system that was so unstable as to be disordered by so slight a cause, and the burden of proof, it seems to me, rests with those who claim the contrary.

What then is the explanation of these physical disturbances? They are the manifestations in the realm of the physical of the same disease which in the realm of the psychical is manifested as insanity and this disease is a disease of the nervous system.

Referring to the functions of the nervous system be-

1. "Criminal Responsibility," p. 79.

2. "The General Conditions Associated with Insanity," THE JOURNAL A. M. A., March 17, 1906.

fore described, viz., the adjustment of the individual to his environment by the higher centers and the harmonizing of the functions of the several organs by the lower centers, it can be seen that any disease of the nervous system which produce insanity must be very apt to produce physical disorder and the nature and extent of that physical disorder will depend on the depth of the disease in the hierarchy of the nervous centers.

Do the facts of clinical psychiatry support this view? I think they do. Take for instance the classical type of paranoia, a disease which manifests itself at the height of the individual's mental development, at the crest of the wave of cerebral and psychic evolution. The symptoms of this psychosis are symptoms of disorder of the highest of the functions of mind, the latest to be acquired and are in the main confined to the intellectual processes. False beliefs and defects of judgment are prominently in evidence while psycho-sensory disorders may be few or even absent altogether. As we might expect, the symptoms of physical disorders in the paranoic are practically nil. He does not at any time give the appearance of being a sick man, but, on the contrary, often manifests unusual energy and activity in exploiting his schemes or in protecting himself from his persecutors.

How different a picture do we see in dementia præcox. In this disease, there is a profound defect of nervous organization, the development does not proceed beyond the period of puberty. At this early age the mental life of the individual has come to an end. In a disease due to such a far-reaching defect of nervous organization could we reasonably expect the functions which regulate the harmonious relations of the several organs to escape? As a matter of fact, the physical disorders in this psychosis are marked and wide-spread. We find all sorts of motor anomalies-reflex, automatic, and voluntary—disorders of secretion and tissue metabolism and certain chemical changes indicating the formation of toxins and thus autointoxication.

And so it is with the other psychoses. Those in which the disease is deep-seated, dependent on destructive lesions of the nervous system, manifest the more marked evidences of physical disorder. In paresis, the physical symptoms may be by far the most prominent of the early manifestations. In senile and arteriosclerotic dementia due to destructive cerebral lesions and occurring on the down-hill side of life the physical signs are well developed. Even in manic-depressive insanity, which deserves perhaps as much as any of the well-defined psychoses to be classed as functional, we find physical disturbances varying all the way from the most mild to the most severe type, but keeping pace throughout in their degree of severity with the severity of the mental symptoms. In the highest degree of manic excitement there is developed a picture closely resembling that of a toxic delirium.

This seems to be the general conclusion at which Tomlinson has arrived from his studies. Commenting on the results, he says:[2] "In this connection it should also be recognized that as it is the principal function of the general nervous system to direct the activities of the rest of the organism, a failure in dirigent function would, of necessity, interfere with normal activity of the vegetative organs, thus reducing their capacity for work, lowering the general vitality and further decreasing the capacity of the general organism for adaptation to external relations, by involving the retention, not only of the waste products of its activity, but also the generation of toxic substances from the food materials taken into the digestive tract."

Insanity is a disorder of the mind due to disease of the brain and it is this underlying disease of the brain that is the essential thing manifesting itself on the psychical side as insanity and on the physical side as physical disorder. The physical disorders then are but expressions of the same disease that psychically we know as insanity and therefore, can not in any sense be set down as causes for the mental disturbances but only as correlative phenomena. Insanity is but a group of symptoms, as are the various physical disturbances found in the insane.

The physical disturbances of dementia præcox have come into prominence because they are so numerous and so pronounced. They form such an important part of the clinical picture of this disease, however, because the nervous disease is so deep-seated and far-reaching in its effects. Because of their objective character, and, too, because of our limited knowledge of the psychical, they are often of great importance in estimating the gravity of the disease and its prognosis.

MERCURIAL NEPHRITIS WITH UREMIA.

REPORT OF A FATAL CASE.

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So many cases of mercurial nephritis have been recorded in medical literature that mercury should be recognized as an agent possessing a peculiarly irritative and destructive action on the renal tissues. Certain individuals appear to be far less sensitive to its influence than others, and a few tolerate enormous quantities without apparent harm. In other instances, and in children especially, the smallest fraction of a grain of any of the mecurial salts will act so maliciously and so rapidly as to astound the physician in charge, and even to carry off the patient before his eyes. Such an instance is reported by Buchner.[1] A teacher rubbed into each of the scalps of between 80 and 90 boys about a teaspoonful of mercurial ointment for pediculosis. All the boys showed symptoms of poisoning and one died. Sackner also reports[1] a case of an adult into whose hands five grams of mercurial ointment were rubbed at one treatment for rhagades. A severe dysentery followed and the case proved fatal.

As already stated, this is only one of a long series of similar cases. With their increase in frequency it has become customary to dwell on the prominent symptoms (subjective) and to overlook the more subtile, though even more dangerous, influence of mercury on the kidneys. For this reason alone, it would appear useful to cite a case which came to my attention in the wards of the Philadelphia Hospital. My belief that its report might prove salutary crystallized into determination that no time should be lost when I read in the therapeutic column of THE JOURNAL,[2] A. M. A., the following quotation from a communication published over the name of the author physician:

I am of the opinion that heretofore many if not all physicians have overlooked the all-important bearing of "portal circulation" in inflammation of the lungs. In active practice for the last forty years, the last ten of which I have been in the habit of using boldly, and most successfully, calomel in heroic doses, adult dose gr. x every four to six hours, day and night p. r. n. The microbic bed of morbidity and mortality is freed from its pulmonic environment, and as seven-tenths

1. Quoted by Sackner, Berlin. klin. Wochft., 1892, p. 619.
2. July 2, 1904

of the disease is eliminated in from twenty-four to forty-eight hours, the remaining three-tenths is treated better by careful nursing than by overzealous doctoring. I write, he concludes, from experience.

I believe that the term overzealous is very apt in such a connection. When applied to what seems to me an over free use of a dangerous drug, it might even be bettered by the term overcareless. I feel that not only is there in this method the likelihood that the microbic bed will be freed from its pulmonic environment, but that the sick bed, whether microbic or otherwise, will be freed by death from its occupant. The following case history will further illustrate my position:

Patient.—J. W., colored, a laborer, aged 25, was admitted to the Philadelphia Hospital Oct. 16, 1903.

Course of Disease.—He ran the course of a severe and extensive pericarditis, during the course of which the urine showed a trace of albumin, but at no time casts or other renal sediment.

On October 30 he was convalescent, in the absorptive stage of pericarditis.

On November 1 there was stomatitis, and two teeth were removed by the dentist. The following day the jaws were clenched, the patient could not enunciate, the breath was fetid. There was no stiffness of the cervical muscles, no fever, no suggestion of tetanus; pulse, 72; respirations, 26.

On November 4 the stomatitis was extreme, the jaws were fixed, the patient unconscious, the breath foul and characteristically fetid; there was slight opisthotonos, and contractures of the arms and forearms. The man could be roused, but at once relapsed into stupor. There was slight pretibial edema, and slight pitting on pressure over the chest wall. The second aortic cardiac sound was loud and metallic, and the patient was in collapse. The lungs appeared clear. Death occurred on this day from uremia.

Autopsy.—Nov. 7, 1903. The autopsy was interesting, especially in regard to the heart and kidneys. The heart was enormous, the left ventricular wall measuring one inch in its greatest diameter, the muscle appearing to be studded at all points with yellow fat. There were also fibrous scars in the external wall. The coronary arteries were not markedly sclerosed. The aortic, tricuspid and mitral valves were insufficient, the former two admitting easily four fingers and the latter three. No vegetations were present. The pericardial sac was attached anteriorly to the sternum by soft lymphoid adhesions, over an area of nearly a square inch, directly behind the midsternum. The sac contained not more than one ounce of pure serous fluid. There were fine adhesions between the layers of the pericardium.

The kidneys were small, almost infantile, and very pale and anemic; the left was smaller by one-third than the right. No urine was found in the bladder. The capsule was adherent in the case of both kidneys, and there was a decided diminution of the cortical substances. Everywhere there was noted a widespread yellow fatty degeneration and infiltration. The brain showed nothing to account for the nervous symptoms other than a slight thickening of the pia, and a small quantity of semiturbid fluid at its base.

Microscopic examination showed an extensive myocarditis, as well as a high grade of chronic diffuse nephritis, with a subacute (or fresh) condition superimposed in the form of a hemorrhagic inflammation.

Apart from an unexpected disaster in the convalescence of a simple, though severe, pericarditis, the case was interesting as a study in physical diagnosis. The enormous area of cardiac dullness, supposedly corresponding to the effusion, the unusual size of the heart as discovered at the autopsy, the widespread transmission of the pericardial friction sounds, and, finally, the perfect presentation of the three stages of inflammation, effusion, absorption and recovery, all rendered the case interesting from the clinical aspect.

Suddenly the convalescence was interrupted by a severe stomatitis, to relieve which the consulting dentist extracted the two supposedly offending teeth. This procedure was followed by further inflammatory swelling and by closure of the jaws. It was then learned for the first time that the patient had received 84 successive grains of calomel within fourteen days as the result of a misinterpretation of an order for a single dose.

Unfortunately, there had been no critical study either of the urine or of the blood, as judging from the routine urinalysis the kidneys had apparently been doing their full duty. The first examination had detected only a trace of albumin and no renal sediment. The autopsy findings, therefore, assume an additional importance.

Two important lessons were learned from this undoubtedly avoidable waste of life: First, that the routine administration of mercurial laxatives and purges prior to the receipt of a careful urinalysis may occasionally result in fatality, even though the mildest mercurial salt be employed. Second, that an existing nephritis should contraindicate any but the most careful use of the drug, not excepting those cases in which it is possible to trace the renal disability to a syphilitic infection. There are instances on record of individuals who have survived enormous, almost incredible doses of calomel. Usually the medicine has been administered in a single dose, though by no means always. Pereira[3] mentions a case under the care of Hellweg, in which "a few grains" proved fatal and another treated by Vagnitius in which 15 grains caused death.

The record of a boy aged 14 is reported in the *London Medical Gazette*,[4] in which death was brought about with six grains of calomel. There was severe ulceration of the mouth, enormous swelling of the face, fetor of the breath, and death; but no ptyalism. Sixty years later Halle[5] quotes a case reported by Riegel of the prolonged administration of calomel resulting in death; and another reported by Adam, in which severe hemorrhagic inflammation of the intestines with thrombosis of the vessels and edematous infiltration of the tissues followed the use of 15 grains of calomel during the course of three days. He also refers to a case of Pel in which the patient died soon after the use of calomel, and in which considerable quantities of mercury were recovered from the kidneys. Mitchell[6] quotes two cases from Hoffman occurring in boys of 12 and 15 years. One died on the sixth day, and the other a still shorter period. Mitchell refers to an old and very plausible theory, that calomel acts differently at different times, and as he puts it, "in different epidemics." Referring to its use in cholera, he says: "In 1818 from fifteen to twenty grains of calomel operated like a charm." He then cites his later case in which were given nine drams of calomel, with oil, salts, and jalap, "without either emetic, cathartic, or sialogogue effect."

The generous doses of calomel formerly used in our western states are classic the world over. They almost rival an instance, cited also by Mitchell, in which a man, known to him, had in his possession "the last of twelve powders ordered for a cholera patient in 1833, which (powder) contained one ounce of calomel. Eleven of the same size were administered, and the patient died before the twelfth could be given." Many writers refer to the administration of 840 grains in eight days[7] as the

3. "Materia Medica," 1843, p. 613.
4. Vol. xviii, p. 484.
5. Therapeutic Monthly, June, 1902, p 218.
6. New Orleans Med. Jour., 1844-5, p. 28-35.
7. Amer. Jour. Med. Sc., vol. xxvii.

largest dose followed by recovery, but the preceding seems to surpass even its generosity. With equal frequency small doses have been responsible for fatalities such as that reported in this paper. One was that of a child, aged 11,[8] who died in 24 hours, from eight grains of calomel. Violent salivation followed with ulcerative inflammation of the mouth, face and neck, extensive destruction of the cheeks, disgusting fetor of the breath, and death on the eighth day.

With regard to the influence of mercurial salts on the kidneys of syphilitic subjects, a word of caution may also be in order. The general tendency at the present time is toward the belief that a nephritis occurring in a syphilitic, not definitely known to have had renal disability before the specific infection, should be looked on as a syphilitic process in the kidney, and treated with mercury. This belief, I suspect, is not always founded on fact, and treatment based on the theory may defeat the aim of the physician, creating a more serious condition than that already present. I have had recently under my care two young men, both suffering from secondary syphilis. In both instances, repeated urinalyses have been made since the first administration of mercury, and in both the urinary picture remains normal until a certain dosage has been sustained for a brief time.

In the first case one-half grain of the protoiodid three times a day is tolerated and usually controls a severe and otherwise persistent specific sore throat, the urine remaining normal. As soon, however, as one additional one-sixth grain is added to the daily dosage, albumin and hyalin casts appear in the urine; and on increasing the dose the patient complains of fulness under the eyes, headache, and backache, all of which disappear in a few days on discontinuing the use of the drug. This experiment has been tried for the third time during an exacerbation, when it was desirable to push the drug to its physiologic limit. There is always the same result. On each occasion, the urinary findings have eventually become normal, but each time after a long interval. The problem in this case is the decision as to the greater danger of the disease or the remedy.

The second case is very similar in its subjective symptoms, and in the early appearance of showers of hyalin casts on exceeding a certain small dosage of mercury. Up to the present, however, no albumin has been detected and even the casts disappear when the protoiodid is limited to half a grain three times a day.

It need hardly be stated that many syphilographers maintain a far higher dosage over months running, and seldom, if ever, require an examination of the renal secretion. There is still another side to the picture. Not long since I gave to a baby, syphilitic from birth, calomel in doses of one-sixth of a grain for weeks at a time, with rapidly favorable results, and with not a sign to indicate deleterious action on the kidneys. Heller claims that the form of the drug and the method of administration have much to do with the favorable or unfavorable action on the kidneys. With the bichlorid of mercury injected hypodermically he has never been able to observe a nephritis, though when using the salicylate of mercury and other insoluble salts he repeatedly produced serious forms of renal disease. He refers to numerous cases of albuminuria, following inunctions with mercurial ointment. As with most observers, his patients with nephritis recovered when the drug was discontinued. Virchow[9] cites the case of a patient aged 31, with syphilis, in whom a fatal ending followed a course of inunctions with mercurial ointment, extending over 14 days. Altogether a total of 50 grams was employed, 5 grams being used on each occasion.

Attention has been called to the danger involved in the indiscriminate use of mercury, even in syphilis, by no means with a view to discouraging its use, but its abuse. I consider it an abuse of the drug to employ it prior to a report on the urinary findings; or in the light of such instances of misfortune as have been cited, to employ it in any case in which the integrity of the kidneys is questioned.

It is also certain that in the light of these facts frequent examinations of both patient and urine form a *sine qua non* of conscientious and safe mercurial treatment of any disease. The most vigorous patient may display a violent susceptibility to minute doses of the mildest salt, while a weakling may tolerate large quantities over a long period.

8. Dublin Hosp. Reports, vol. iv, p. 299.
9. Berlin. klin. Wochft., 1887, p. 252.

Special Article

THE PHARMACOPEIA AND THE PHYSICIAN.

CHAPTER XXI.

DRUGS ACTING ON THE SKIN AND MUCOUS MEMBRANE, MAINLY WITH REFERENCE TO EXTERNAL USE.

There are so many substances which have been used as irritants under varying conditions that we can not attempt to do more than mention the more useful of the agents frequently employed for this purpose, together with some of the conditions in which clinical experience has shown them to be most beneficial.

While the employment of counter-irritants is almost wholly empirical, the regions of the skin which Brunton has indicated for their use when it is desired to influence the internal organs correspond well with those which Head has shown to exhibit tenderness of the skin in connection with diseases of the same organs.

Brunton directs the irritant to be placed over the larynx, ovaries or sciatic nerve for affections of those parts, over the ensiform cartilage for gastric disturbance, above and below the knee in rheumatism, over the ball of the great toe (dorsal surface) in gout, behind the ear in facial neuralgia, at the base of the brain and back of the neck for cerebral affections, and along the dorsal region of the back to affect the uterus.

The mildest of irritants is water or saline solution used as a bath. The shock of the cold water applied to the skin and the slight irritation of the subsequent friction, preferably with a coarse towel, are followed by a reaction attended with a considerable and lasting stimulation. Very cold water may produce too great a shock in persons who are not robust, and the result will be depression, but there can be little doubt that baths are extremely beneficial when the temperature is so regulated that a healthy glow and a feeling of well-being succeed. It seems that the question of the usefulness or the harm of cold baths, about which there has been so much contention, resolves itself into a question of individual experience. If a feeling of exhilaration and no subsequent depression follows the bath it is not harmful; if no such exhilaration occurs, but a distinct depression is observed, there can be little doubt that the bath is doing harm. In such cases a slight increase in the temperature of the water, with a shorter time and more rubbing, may secure the benefits sought. The same person may require different conditions of temperature at different times, corresponding to variations in the general health.

A mixture of salts is sometimes added to the bath to increase the slight irritant action.

Even milder than the friction, which forms so essential a part of the bath, is the irritant action of the astringents, which

have been discussed in Chapters XII and XIII, but these are followed by lessened irritation, hence they are not considered among the irritants.

Rubefacients.

Rubefaction is the result of a slight irritation of the skin. There is a slight increase in the exudate from the capillaries, and if the irritation be not long continued this exudate is reabsorbed and the part speedily returns to the normal condition.

While all irritants, mild and caustic, cause rubefaction, we shall first consider only those which are used for that stage alone, and take up the vesicants pustulants and caustics later.

ALCOHOL.

Alcohol alone, diluted with water or in the form of hamamelis water, alcoholic tinctures, spirits or liniments, is used more frequently, perhaps, than any other mild irritant, with the possible exception of the bath.

Applications containing alcohol are useful in painful swellings, bruises and a great variety of minor complaints commonly treated in the household without calling on the physician.

While it is probably quite unnecessary, at this late date, to call particular attention to the fact that there is a distinct and a very great difference between the official or ethyl alcohol and the various forms of wood or methyl alcohol, nevertheless the insidiously poisonous properties of the latter substance do not appear to be so well appreciated by the general public. The number and the variety of cases of blindness and of death that have been reported by Buller and Wood[1] amply demonstrate that even the external use of any form of wood alcohol is not entirely free from danger and that its use in any form of medicinal preparation should not be countenanced or tolerated.

Among the numerous preparations of the United States Pharmacopeia that have been and are being used as topical applications, largely because of the rubefacient properties of the alcohol that they contain, we may enumerate:

AQUA HAMAMELIDIS.—U. S.—This preparation, more popularly known as extract of witchhazel, or distilled extract of witchhazel, is now, for the first time, included in the Pharmacopeia. While the preparation itself has been known for many years, and has been used extensively as a household remedy, it has never met with much favor on the part of the medical profession. The official preparation is directed to contain 15 per cent. of alcohol and should be free from methyl alcohol or any of its derivatives.

TINCTURA ARNICÆ.—U. S.—Tincture of arnica represents 20 parts of the dried and powdered flower heads of *Arnica montana* in diluted alcohol. This preparation was at one time very popular with medical practitioners as a topical application in so-called "sprains" and in bruises, but is now seldom employed. The same is true of:

TINCTURA CALENDULÆ.—U. S.—This preparation represents 20 per cent. of the dried and powdered florets of *Calendula officinalis*, the well-known marigold of our gardens.

Probably the most objectionable feature in connection with the use of any of the official tinctures as topical applications is their tendency to stain. This objection is largely overcome by the use of the simple diluted alcohol, one of the numerous unofficial toilet waters or colognes, or by the use of one or the other of the official spirits.

In addition to SPIRITUS FRUMENTI.—U. S.—Whisky, and SPIRITUS VINI GALLICI.—U. S.—Brandy, the most frequently used of this class of preparations is:

SPIRITUS CAMPHORÆ.—U. S.—This is an alcoholic solution containing 10 per cent. of camphor.

SPIRITUS GAULTHERIÆ.—U. S.—This contains 5 per cent. of oil of gaultheria in alcohol.

The most widely used, as well as the most popular, of the mildly rubefacient preparations of the Pharmacopeia is:

LINIMENTUM SAPONIS.—U. S.—Soap liniment is variously known as liquid opodeldoc, camphorated soap liniment and camphorated tincture of soap. It contains 6 parts of soap, 4.5 parts of camphor, 1 part of oil of rosemary and 72 parts of alcohol with sufficient water to make 100 parts. This preparation has long been popular as a topical application and is not infrequently used as a vehicle for other more active rubefacients, sedatives and anodynes.

A somewhat typical compound liniment is the

LINIMENTUM CHLOROFORMI.—U. S.—This is a simple mixture of 30 parts of chloroform with 70 parts of soap liniment, and constitutes a very good illustration of the possible uses of soap liniment as a solvent or vehicle.

CHLOROFORM.

Chloroform is one of the more active rubefacients and the action quickly passes this stage if its use be continued. Chloroform readily dissolves fat, and, being very volatile, it penetrates quickly and causes considerable redness and pain. A few drops of chloroform placed on a little absorbent cotton and applied over a painful joint, such as a bunion, in such a way that evaporation of the chloroform is prevented, causes a good deal of pain and often affords speedy relief. It should not be applied in this way for longer than ten or fifteen minutes. Chloroform may be used as a counter-irritant by putting a few drops on cotton in a wide-mouthed bottle; the mouth of the bottle is then applied to the area to be treated, for a few minutes at a time.

Chloroform liniment, noted above, is much less painful, or not at all so in most cases, and is much slower in producing its effects. Chloroform liniment is usually directed to be applied to the affected part by being thoroughly rubbed in, thus securing the additional rubefacient action of friction. It may, however, be more economically applied, and it is frequently quite as effective, if directed to be put on cotton, applied to the affected surface and then covered with several layers of cloth or otherwise prevented from evaporating too rapidly.

Volatile Oils.

All the volatile oils are irritant, their action ranging from that of the mild sandalwood or copaiba oil to the extremely irritant volatile oil of mustard or even the caustic action of oil of cloves. The use of the milder members of this series for their effects on the urinary tract has been mentioned in connection with diuretics. Some of the volatile oils, such as pennyroyal and savin oils, which are somewhat more irritant, have been employed to produce abortion by the reason of irritation of the intestine and the consequent participation in the effects by the uterus.

Official Preparations.

Of the official substances that are more or less closely connected with the turpentine group and are frequently used externally, we have:

OLEUM ROSMARINI.—U. S.—This is a volatile oil distilled from the fresh flowering tops of *Rosmarinus officinalis* and is one of the ingredients in the well-known soap liniment.

OLEUM SABINÆ.—U. S.—Oil of savin has been quite extensively used as a local irritant. It must be used with caution in order to guard against the tendency to act as a vesicant.

OLEUM TEREBINTHINÆ.—U. S.—Oil of turpentine is the volatile oil distilled from turpentine. Even as an external application it is not infrequently used in the form of

OLEUM TEREBINTHINÆ RECTIFICATUM.—U. S.—This is identical with oil of turpentine in chemical properties, but it has a more agreeable odor.

TEREBINTHINA.—U. S.—This is officially described as the concrete oleoresin of *Pinus palustris* and of other species of *Pinus*.

RESINA.—U. S.—Rosin, resin or colophony is the residue left after distilling off the volatile oil from turpentine. The last two articles, rosin and turpentine, are interesting only as constituents of several official preparations, of which the best known are:

CERATUM RESINÆ.—U. S.—This is a cerate containing 35 parts of rosin, 15 parts of yellow wax and 50 parts of lard.

CERATUM RESINÆ COMPOSITUM.—U. S.—This is a revival of the one-time official Deshler's salve. It contains rosin, yellow wax, prepared suet, turpentine and linseed oil.

LINIMENTUM TEREBINTHINÆ.—U. S.—This is a solution of 65 parts of resin cerate in 35 parts of oil of turpentine. It has

1. THE JOURNAL A. M. A., Oct. 1, 8, 15, 22 and 29, 1904.

been recommended to be used in place of the oil of turpentine as a local application when the action of the latter might be considered as too actively irritating.

Oil of turpentine may be applied either in the form of the official liniment, diluted with a fatty oil, or it may be used in substance as a stupe; the latter is made by saturating a cloth with hot water, wringing it out and then dropping on it a little warm oil of turpentine, or dipping the moist cloth into the oil of turpentine and again wringing it out and applying while still warm.

Local applications of this kind will be found useful in bronchitis. Great care must be taken in warming oil of turpentine, as its vapor is inflammable. It should be warmed by placing the bottle containing it, uncorked, in a vessel of hot water away from fire.

Plasters of Burgundy pitch, Burgundy pitch with cantharides and of resin were formerly official. In practice these old-time resin plasters have long since been replaced by the more modern rubber-base plasters. The more representative of the rubefacient plasters now in use is the

EMPLASTRUM CAPSICI.—U. S.—This is directed to be made by applying a thin coating of oleoresin of capsicum to adhesive plaster.

CAPSICUM.

CAPSICUM.—U. S.—The dried ripe fruit of *Capsicum fastigiatum* constitutes one of the most popular of the rubefacients used at the present time. Of the available official preparations we have:

FLUIDEXTRACTUM CAPSICI.—U. S.—This is made with strong alcohol.

TINCTURA CAPSICI.—U. S.—This is made with a mixture of 95 parts of alcohol with 5 parts of water, and represents 10 per cent. of the crude drug.

Either of these preparations may be used diluted with alcohol or with soap liniment as a local rubefacient or irritant.

OLEORESINÆ CAPSICI.—U. S.—This is made by extracting capsicum with acetone and may be used in the shape of plaster, as noted above, or in the form of the now popular mixture with petrolatum.

A typical prescription for a rubefacient of the latter type would be as follows:

℞. Oleoresini capsici.....gr. xv 1
Petrolati.....℥ iii 100
M. Fiat unguentum. Sig. Use locally.

MENTHOL.

MENTHOL.—U. S.—This is a secondary alcohol obtained from the oil of *Mentha piperita* or other mint oils. This substance is very largely used in the form of pencils or cones, sometimes in alcoholic solution, rubbed on the skin in neuralgia. It causes a burning and then a sensation of coolness.

CAMPHORATED CHLORAL.—N. F.—This preparation, quite popular in some parts of the United States as a local application, consists of equal parts of hydrated chloral and camphor. It is a thick, oily-looking liquid, which is extremely irritating. It may be diluted with the fatty oils, alcohol or soap liniment.

MUSTARD.

Mustard is official as:

SINAPIS ALBA.—U. S.—White mustard is the seed of *Sinapis alba*.

SINAPIS NIGRA.—U. S.—Black mustard is the seed of *Brassica nigra*.

OLEUM SINAPIS VOLATILE.—U. S.—This is a volatile oil obtained from black mustard (freed from its fatty oil) by maceration with water and subsequent distillation.

CHARTA SINAPIS.—U. S.—Mustard paper is directed to be made by coating rather thick, well sized paper with a mixture of rubber cement and powdered black mustard which has been deprived of its fatty oil.

Mustard foot baths, containing one or two ounces of powdered or ground mustard, preferably the black, thoroughly mixed with a gallon of warm water, are extremely useful for the relief of mild congestions of the head and of the gastro-intestinal tract.

Prompt relief is often obtained in this way from headache and from pain in the stomach. In many cases, even mild attacks of indigestion show decided improvement almost immediately; the action is further accelerated if a hot-water bag is placed over the region of the stomach at the same time.

The feet should be placed in the bath while the legs and feet are briskly rubbed with the mustard water for ten minutes or until the skin is red and some irritation is felt. The extremities are then rubbed dry with a coarse towel and wrapped in flannel or a blanket. When a slight degree of counter-irritation is desired for some time, a mustard poultice is employed. This is made by mixing one part of the ground black mustard with about five parts of flour (or ten parts of flour in the case of children), and mixing with enough water to form a mass. This is then spread on cheesecloth and applied at once.

Mustard poultices have been largely replaced by the much more convenient mustard papers, which are dipped in tepid water and applied at once. They are prone to become worthless in damp climates, since the absorption of moisture causes the slow development of the volatile oil, which then evaporates as fast as it is formed. With proper precaution, however, they may be preserved for a considerable length of time, and they will usually be found to afford the most convenient means of applying counter-irritation.

Heat.

The uses of heat have been touched on elsewhere. They are so numerous and so well known that they scarcely require further mention at this time. We may be permitted to call attention, however, to some of the various forms of cataplasms or poultices that are frequently used for their rubefacient or irritant properties.

Among the official substances that are frequently used for the preparation of poultices we have:

LINUM.—U. S.—Linseed or flaxseed is the ripe seed of *Linum usitatissimum*.

ULMUS.—U. S.—Elm or slippery elm is the dried bark of *Ulmus fulva*, deprived of its periderm.

CARBO LIGNI.—U. S.—This is charcoal prepared from soft wood and powdered.

Poultices are ordinarily prepared by mixing the requisite amount of ground flaxseed, ground elm bark or other substance with enough boiling water to make a rather stiff mass, inclosing this in a piece of gauze or muslin and applying to the surface.

The rubefacient properties of a poultice may be increased by the addition of ground mustard, tincture of capsicum or of oil of turpentine. For removing fetor or to act as disinfectants, poultices may have added to them powdered charcoal, chlorinated lime or the official solution of chlorinated soda.

The present eighth edition of the United States Pharmacopeia has included one poultice, as:

CATAPLASMA KAOLINA.—U. S.—This consists of kaolin, glycerin and boric acid, with thymol, methyl salicylate and oil of peppermint as admixture to give it a pleasing odor. This preparation, like other poultices, is most efficacious when applied hot, but, as its action depends to a very great extent on the rubefacient properties of undiluted glycerin, due precaution should be taken to prevent the absorption of water or of watery vapor during the course of preparation or when heating it preparatory to applying.

Practically the same preparation is being offered to the medical profession at the present time under a variety of trade names, and while the combination undoubtedly has uses, many if not all of the positive claims that are made in connection with it are, to say the least, somewhat exaggerated, and the preparation should not be expected to accomplish more than might reasonably be expected from an equivalent application of heat and mild rubefacients.

One other point in connection with this particular preparation that has been the cause of some controversy in the advertising pages of medical journals is the question of priority. This question may safely be ignored, as the mixture, apart from the flavoring ingredients, can not be said to be new. Glycerin magmas have been known and used for upward of half a century, and a formula for practically an identical preparation may be found in the *Pharmaceutical Journal*, London, for March, 1858.

Heinrich Stern has very recently called attention to the revival of the use of formic acid for increasing the sexual desire, much as cantharides is used. Formic acid has long been known and used in domestic practice as a rubefacient. In Germany it has found considerable favor in regular medicine and is official in the German Pharmacopeia as a 24 per cent. solution and also as a spirit of formic acid, the latter containing 4 per cent. of the official solution of formic acid in a mixture of alcohol and water.

IODIN.

The official preparations of iodin that are used as rubefacients are:

LIQUOR IODI COMPOSITUS.—U. S.—This is better known as Lugol's solution; it contains 5 per cent. of iodin and 10 per cent. of potassium iodid in water.

TINCTURA IODI.—U. S.—This is an alcoholic solution and contains 7 per cent. of iodin and 5 per cent. of potassium iodid.

UNGUENTUM IODI.—U. S.—This contains 4 per cent. of iodin and 4 per cent. of potassium iodid in a mixture of glycerin and benzoinated lard.

Iodin in the form of the tincture or of the solution is very commonly applied to the skin as a counter-irritant. Repeated applications produce a caustic effect, but the action is very easily controlled. One great disadvantage possessed by the official preparations of iodin is the dark staining of the skin. Numerous efforts have been made to obviate this by using so-called colorless tinctures of iodin, which are merely solutions of iodids. It is much better to apply the iodin until sufficient irritation is caused and then remove the stain by washing with dilute solution of ammonia water or with a solution of sodium thiosulphate.

A more modern preparation of iodin that promises to replace the official preparations as an external application is a solution of iodin in saponated petrolatum, a formula for which will be found in the edition of the National Formulary now in press.

Saponated petrolatum may be made by simply mixing:

Liquid petrolatum	℥ii	60
Oleic acid	℥i	30
Spirit of ammonia	℥ss	15

In the order enumerated, the only necessary precaution being to use preparations that correspond to the requirements of the United States Pharmacopeia.

This simple saponated petrolatum will readily dissolve iodin up to 10 per cent. of its weight. A 5 or 6 per cent. solution of iodin, however, will be found to be most useful and not too irritating.

Probably the greatest advantage possessed by a preparation of this kind is due to the fact that it causes little or no stain and may be readily washed off with soap and warm water.

Saponated petrolatum may also be used for applying a number of other rubefacients, such as camphor, menthol, chloroform, methyl salicylate and turpentine.

Clinical Notes

UNUSUAL EFFECT OF HOMATROPIN.

REPORT OF TWO CASES.

JOSEPH W. SHERER, M.D.
KANSAS CITY, MO.

The following report of an extraordinary effect of a much used drug is instructive and of interest as illustrating the idiosyncrasy of individuals in their relation to medicines. In these cases the apparent physiologic action of homatropin hydrobromid was irregular to an extraordinary degree. The two observations here chronicled are the only instances which have come under my notice of excessive persistence of the effect.

I am unable to estimate a percentage of frequency for the occurrence of this accident, but suppose it to be rare, for these two cases are the only instances which have occurred in using homatropin several thousand times. The experience of others in this particular should be of interest to all. It is of moment to every practitioner, for the reason that it is especially in the more urgent cases of persons whose time is of great value that homatropin is employed.

I have just had it forcibly impressed on me how painfully embarrassing it may be to promise an active business man removal from his important affairs for one or two days only, and then find two weeks necessary for the eyes to regain accommodation and light tolerance. For this reason the experience of others is desirable.

CASE 1.—May, 1897. Female, aged 25, housewife, mother of a family, asthenopic symptoms pronounced. A 3 per cent. solution of homatropin was used. An application was made at bedtime, on rising and at intervals of ten minutes for an hour and a half before measuring the refraction. The patient came to the office immediately after breakfast. The eyes were in no way unusual. The refraction was plus and compound and the error was of an ordinary amount only. The mydriasis and cycloplegia persisted for eight days and the patient manifested great anxiety and impatience. I could not rid myself of the impression that the perturbation and alarm were partly assumed, but as the cause was real there was absolutely no way but to counsel patience and to emphasize the certainty of recovery with the lapse of time.

CASE 2.—January, 1906. Male, aged 41, business man, very busy, neurasthenic, the lifelong subject of periodic violent attacks of migraine. Homatropin solution was used half as strong and less frequently than in the foregoing case on account of age. The same vial was used on the preceding day on a newspaper man, aged 43, with recovery in eighteen hours, and subsequently on two other patients, one of whom reported complete recovery in twenty-four hours and the other in thirty hours. The pharmacist was positive as to the accuracy of the compounding of the prescription. The effect persisted with complete cycloplegia for fifteen days. This was a source of great annoyance to the patient, who bore it, however, with much resignation and fortitude, the more patiently as he keenly felt the need of relief from his malady. The recovery was complete eventually.

In neither of these cases was there any complication such as, for example, the onset of glaucoma. In the latter case there was more danger on account of the age. Had so unfortunate a thing occurred, eserin would probably have controlled it.

VICARIOUS MENSTRUATION DURING PREGNANCY.

N. P. McGAY, M.D.
SHILOH, OHIO.

Patient.—M. D., aged 25, married about five years.

History.—The patient had a miscarriage about three years ago, probably self induced. The uterus had to be "scraped out" about three weeks later. She has always been healthy and has had no disorders of menstruation up to this time. The flow occurred every thirty days, until May 30, 1905, since which time it has been decidedly irregular. On June 29 and 30, she had severe attacks of nose bleed, but no signs of menstrual flow. July 30 and 31, the same thing occurred. On August 19 she became alarmed at the non-appearance of menstruation and consulted me. I made a diagnosis of probable pregnancy from the symptoms then discernible. On August 30 and 31, she had a return of the menstrual flow but no nose bleed. In September and October, however, she again had severe attacks of epistaxis. On November 23, I made a thorough examination and confirmed my previous diagnosis. Epistaxis again occurred on December 1. On December 10, she took a trip of about ten miles in the country over rough roads, and an hour or two after her return labor pains set in. On the morning of December 12, she gave birth to a four-pound girl which lived twenty-three hours. The patient was up in the usual ten days, but she has had neither menstrual flow nor nose bleed since.

A SIMPLE METHOD OF FINDING AN EASILY ACCESSIBLE PORTION OF THE LATERAL SINUS.*

* Read before the Wayne County (Detroit) Medical Society, May 7, 1906.

EMIL AMBERG, M.D.
DETROIT, MICH.

Four right and four left temporal bones picked out at random, show that an easily accessible portion of the lateral sinus can be found when we open that part of the mastoid process which is located (Fig. 1) in the direction of the line

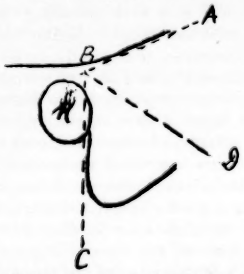

Fig. 1.—M., Meatus externus. A. B., Linea temporalis. B. C., Anterior mastoid line. B. D., Bisecting line of angle A. B. C. and directing line for lateral sinus.

which divides into two halves the angle formed by the linea temporalis and the anterior border of the mastoid process (an angle of about 115 degrees). This topographic consideration is important from a clinical point of view.

CERTAIN MOTILE ORGANISMS IN THE BLOOD PLASMA IN DENGUE.

CONRAD REICHE.
Sergeant, Hospital Corps, U. S. Army.
CEBU, P. I.

While in charge of the laboratory of the military hospital in Cebu, P. I. (Captain Kulp) it was my duty to examine the blood of all malarial and dengue patients. An epidemic of the latter disease occurred during December, 1905, and lasted about six weeks. No malarial parasites were found, but I observed in nearly every case very active, small (about 2 micron), round translucent bodies, with clearly defined edges, very motile, and easily visible with a 1/6 objective, but better with 1/12 oil immersion lens. They were seldom or never found in the erythrocytes, but often on them, as well as free in the plasma. They appeared about the second day of the fever, and could never be found after the temperature became permanently normal or after the administration of quinin. They sometimes remained active for as long a period as an hour and three-quarters. Unfortunately, the epidemic ceased suddenly and the contemplated staining and mosquito experiments had to be abandoned.

New Instruments

SET OF THREE NEW INSTRUMENTS FOR THE TREATMENT OF CHRONIC ENDOTRACHELITIS.

DANIEL H. CRAIG, M.D.
BOSTON.

The length of the three instruments is equal, and is 22 cm. This length was chosen as the shortest which would enable the gynecologist to satisfactorily accomplish the treatment without allowing his hands to come in contact with the patient. This seemed to me important because this method being designed for use at the office or out-patient clinic the thorough sterilization of the hands consumed too much time. With this length of instrument ordinary manual skill and dexterity render such sterilization entirely unnecessary.

The cervical forceps (Fig. 1) was designed to grasp the anterior aspect of the portio vaginalis as near as possible to, but not into, the external os. The tissues are here very often so soft as to tear when so grasped by the ordinary tenaculum or tenaculum forceps under the strain to which this grasp is to be subjected. The ordinary grasp with one blade within and the other without the cervical canal will later be seen to be obviously impossible in the use of either the dilator or the curette. The two pairs of opposed teeth give a grip which has never lacerated. The curve on the flat facilitates the combined use of the forceps and dilator with one hand.

Figure 1.

The external os dilator was suggested by the conical calibrator used in dilating the external urinary meatus preparatory to cystoscopic work. Each of its dimensions is definite and has its *raison d'être*. It is of rigid steel throughout. The diameter of its tip is 2 mm., which is as small as it could be made without actually giving it an angular point (Fig. 2). The length of the cone from tip to shoulder is 2 cm. This length was chosen because being 0.5 cm. less than the ordinary depth of the cervical canal it would even permit of some eversion, due to laceration, without the tip of the cone impinging on or going through the contracted internal os. A cervix in which there is more than 0.5 cm. foreshortening, owing to laceration and eversion, is so patulous as not to require the use of any dilator. The narrow parallel surface just below the shoulder facilitates the retention of the dilator within the ex-

Figure 2.

ternal os long enough to produce sufficient relaxation without maintaining so forcible a degree of pressure as to be constantly disagreeable to the patient. The shoulder is, of course, self-explanatory. The flattened base of the handle facilitates the maintenance of a steady unirritating pressure. The perimeters of the shoulders are made hexagonal to prevent rolling and so coming in contact with unsterilized material.

The only features about the curette which need attention are the shape and width of its cutting blade. It is sharp, the edge being obtained by beveling from above downward and inward, making the blade cut as the curette is withdrawn. The blade and its fenestrum are triangular, presenting a base of 6 mm. and relatively sharp angles. The base is just twice

Figure 3.

the diameter of the normal internal os as stated by Deaver (Fig. 3). This excess width serves to render it impossible to introduce the curette past the internal os, unless it be dilated, which in itself constitutes a contraindication to the use of this curette, without the employment of sufficient force to lacerate the tissues. The sharp angles serve on the rotation of the curette, to remove the pathologic tissues too near to the internal os to be readily reached in the ordinary traction of the curette, and are especially useful in those cases in which a sharp angle exists just below the internal os due to pressure atrophy with excavation or internal laceration of the cervix. Three furrows on the appropriate surface of the hexagonal handle indicate the direction of the cutting blade. The curette is of rigid steel throughout, no necessity for flexibility having been encountered.

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THE IDENTIFICATION OF SPECIES IN BACTERIOLOGY.

In the early days of bacteriology it seemed to some workers a relatively simple matter to distinguish between different species of bacteria and either to assign to every organism its place in an established group or else to install it as a "new species." It soon became apparent, however, that the ordinary cultural characters afforded an insecure basis for such differentiation, since micro-organisms closely related in some of their growth phenomena showed in others wide divergence, and since also one and the same bacterium varied greatly in its manner of growth and in its chemical products under different conditions and at different times. Morphologic differences were, if anything, less to be relied on than physiologic. The biologic relationship of different micro-organisms consequently became, and to some extent still remains, a subject for speculation rather than for exact verification.

The discovery of the agglutinative reaction, now so widely used in the Gruber-Widal test for typhoid fever, was looked on at first as bringing order into the chaos of bacterial types and groups, and was thought to supply a criterion of specificity to which no exception could be taken. Further investigation has shown, however, the limitation of the agglutinative reaction as a decisive standard of species differentiation. Park,[1] in an able address, has recently pointed out some of the manifold sources of error that tend to vitiate the value of the reaction as ordinarily employed, and that prevent its acceptance as a never-failing diagnostic aid. Even among typhoid bacilli, the group in which the reaction has been most widely and successfully used, inagglutinable races are sometimes encountered, so that if a bacterium isolated from water fails to agglutinate with a true typhoid serum, it can not on that account alone be contumeliously rejected as a non-typhoid organism. Among the related group of colon bacilli, as is well known, agglutination by specific sera affords no assistance whatever in identifying bacteria of similar origin and identical cultural characters. In general, the groups of common saprophytic bacteria do not lend themselves to differentiation and classification on the basis of the agglutinative test.[2]

While agglutination has, therefore, for some time, been losing ground as an absolute and final method for identifying bacterial species, another phenomenon, arising out of the injection of animals with bacterial cultures, has been considered of great importance. This is the so-called Pfeiffer's phenomenon, which is dependent on the development of a specific bactericidal substance in the body of an immunized animal. Many observers have laid great stress on the specificity of this germicidal reaction, which has been maintained to furnish proof of bacterial identity even when everything else, including the agglutinative test, failed to declare itself positively. Especially interesting, consequently, is the recent discovery by Besserer and Jaffé[3] of strains of typhoid bacilli which react atypically to the bactericidal sera. The genuine nature of these atypical typhoid organisms is shown by a variety of characters, among others by the fact that animals immunized against true typhoid bacilli were also immune to the strains in question. Susceptibility to a specific bactericidal serum must, therefore, go the way of the other absolute criteria of differentiation; absence of this susceptibility in the case of a typhoid-like bacillus is no proof that the organism is not, after all, a true but atypical strain of this species. As in the case of the agglutinative reaction, failure to respond to the test is not decisive.

1. Jour. Infec. Dis., Sup. No. 2, 1906.
2. M. L. Lincoln: Jour. Infec. Dis., 1904, 1, p. 268; and M. Hefferan: Science, Feb. 9, 1906.

LATENT TUBERCULOSIS IN CHILDHOOD.

Tuberculosis in childhood, especially latent tuberculosis, is a field comparatively neglected in the modern warfare against this disease. We have grown accustomed to concentrating our efforts on the adult consumptive and on general methods of prophylaxis and have not entered with any degree of fullness into the question of preventive measures for predisposed children. That latent tuberculosis is common in childhood must be admitted, even by those who are not willing to go so far as Behring does in this direction. Two interesting articles recently published from Heubner's clinic[1] show that the blood of many non-tuberculous children agglutinates tubercle bacilli. Whether or not this test is to be regarded as positive proof of tuberculous foci in the body is still a question, but it was significant in these experiments that blood from the umbilical cord never agglutinated tubercle bacilli and the percentage of agglutinations was lowest in children with no suspicion of tuberculosis, higher in children with chronic inflammation of mucous membranes, hypertrophied tonsils, adenoids, etc., and still higher in children evidently scrofulous. Salge found that in 12.5 per cent. of babies under a year old, apparently non-tuberculous, the blood agglutinated tubercle bacilli, and Schkarin found the same to be true of 21.4 per cent. of non-tuberculous children.

The death rate from tuberculosis in this country is not nearly so high as in Germany, and it is probable that if such examinations were made of American chil-

3. Deuts. med Wochft., Dec. 21, 1905.
1. Jahr. f. Kinderheilkunde, Jan. 2, 1906.

dren the proportion of positive cases would not be nearly so great. If, however, it were only half as great, the number of children with latent tuberculosis would be large enough to cause grave concern. It seems that the percentage is higher in school life than in early childhood, just as it is higher in childhood than in infancy. Roeder, of Berlin, reported to the Naturforscher Versammlung, in 1905, the results gained by systematic examination of school children in that city. Evidence of latent tuberculosis was found in a surprisingly large number of children, and the number increased with each year of school life.

Unfortunately, we have no statistics in this country as to the frequency of tuberculosis in school children. W. K. Chalmers has given us those for Glasgow, and by classifying the children according to the economic standing of their parents he is able to show, as one would expect, that the number of tuberculous children increases with the increase of poverty. Only 3.4 per cent. of the school children whose families occupy three rooms had tuberculous lesions, as against 5.9 per cent. of those occupying two rooms and 8.3 per cent. of those whose families were crowded into one room.

It is this last class, the children of the very poor, especially the poor in large cities, for whom a systematic campaign of prevention should be planned. A child with latent tuberculosis in a poor family has little chance of overcoming the infection. His days are spent in a crowded, unhealthful home and in a school room from which he usually graduates directly into the factory. Tenement house inspection and control of conditions in factories are legitimate functions of the municipality and their importance in the warfare against tuberculosis has been pointed out again and again; but the control of conditions in school houses is still more indisputably the duty of the municipality, for while the city does not compel a child to live in a certain house nor to work in a certain factory it does usually compel him to spend the greater part of his day inside a certain school room. The child has a right to demand that, while he is there, his health should be safeguarded. Yet what is really the case? What do we do for the health of the child in school, especially of the child with a predisposition to tuberculosis? Apparently we are not so advanced in school hygiene as are our European contemporaries, for the death rate among school children in the United States is higher than in Europe.[2] Take the matter of ventilation: The great majority of school rooms, especially those frequented by unwashed children in old clothes, become close and foul long before the end of the half day's session, and it is a question whether the modern room, equipped with a complicated ventilation system which rarely works, is not worse in this respect than the old-fashioned school which depends on windows for fresh air.

2. G. K. Dickenson: "Sanitary Inspection of Schools and School Children," 1906.

In the matter of cleanliness we are still more remiss. Dry sweeping, or, at the best, sweeping with wet sawdust, is the rule in most school houses. In Boston a few years ago it was found that 41 per cent. of the schools had never had their floors washed. Chicago does better than that, for her school floors are washed five times a year, but imagine any office building with so low a standard of cleanliness as that. Dust from the streets tracked in by hundreds of feet rises from the floor to mix with the still more irritating dust from the blackboard, and in this atmosphere, often unrelieved by a single breath of fresh air, the child must spend the best hours of the day. Surely it is a wasteful and foolish policy which neglects the sanitary conditions of the school house, compels the child with latent tuberculosis to spend a large part of his day in surroundings favorable to the development of the disease, and assumes responsibility only after he has succumbed to it and become a charge on the community.

The child has a right to demand a sanitary school room; that is obvious. That he has a right to demand wholesome feeding during his school life would not be so readily admitted, yet it may prove to be an economy on the part of the city to undertake the feeding of its ill-nourished school children rather than to be obliged to assume the whole care of them in later years. This is the way the matter is regarded in many European countries. England, facing the enormous problem of her half-starved, degenerating, city slum population, has at last begun to experiment with free school dinners, provided by private charity, and it is probable that legislative provision for public relief of this sort will be enacted during the coming session. On the continent of Europe the system of free or very cheap meals for school children has been instituted in France, Germany, Belgium, Italy, Norway and Switzerland. The system is different in the different countries, but in all there is a unanimity as to the disastrous results of underfeeding in school children, the large number of underfed children in the poor quarters of most cities and the enormous improvement which follows the institution of these school dinners.

European city fathers take longer views than we do here and are serenely undisturbed by the cry of "socialistic." They have studied the economic significance of tuberculosis and have decided that, simply from the financial point of view, prevention is better than cure. And prevention of tuberculosis must be begun during the early years of life.

THE POISONS PRODUCED IN SUPERFICIAL BURNS.

In a certain proportion of cases of extensive but superficial burns, death follows after an interval of from six hours to a few days, apparently because of a profound intoxication. As evidence of intoxication, we have not only clinical manifestations, such as delirium, hemoglobinuria and albuminuria, vomiting, bloody diarrhea, etc., but, more convincingly, the anatomic findings at

autopsy, which are strikingly similar to those resulting from acute intoxication with bacterial products. Thus Bardeen found quite consistently cloudy swelling and focal and parenchymatous degeneration in the liver and kidneys; softening and enlargement of the spleen, with focal degeneration in the Malpighian bodies; and particularly degenerative changes in the lymph glands and intestinal follicles resembling those observed in diphtheria, which McCrae considers due to proliferation and phagocytosis by the endothelial cells of the lymphatic structures. Marked changes are usually present in the blood, consisting of fragmentation and distortion of the red corpuscles, hemoglobinemia, loss of water with a relative increase in the number of corpuscles by from one to four millions per cubic millimeter, an increase in the blood platelets, and a rise in the number of leucocytes to from 30,000 to 50,000. Hemoglobinuria is also frequently present, and almost constantly gastrointestinal irritation occurs with anatomic evidences of acute enteritis, acute gastritis, and occasionally gastric or duodenal ulcers. According to Korolenko, the sympathetic nervous system is seriously involved.

It seems probable, therefore, that poisons are formed as a result of the burn that have the effect of causing hemolysis, and that are also cytotoxic for parenchymatous cells and particularly for nervous tissues. These hypothetical poisons seem to be eliminated by the intestines and kidneys, which are injured by the poisons in their passage through these organs. The attempts to explain all the observed effects of burns as due to thrombosis or to embolism by altered red corpuscles seem to have failed, for the peculiar location of the lesions (e. g., duodenal ulcers, necrosis in the Malpighian bodies of the spleen, etc.) does not agree with this hypothesis, and there are too many evidences of the presence of some decidedly toxic substance in the blood. There can be no question that the poisonous substance or substances are formed in the burned area and not in the internal organs as a result of hyperpyrexia, as has been suggested, as shown by numerous observations. Thus if the burned area is removed immediately (in narcotized experimental animals), death will be prevented, whereas, if the burned tissue be permitted to remain for a few hours, death will occur. The poison appears to be absorbed from the burned area into the blood, for if circulation is shut off from the burned area no intoxication results; this probably explains why deep destructive burns of small areas, which are associated with local thrombosis, are much less serious than a superficial slight scalding over a large area.

Apparently the poison is produced chiefly or solely in the skin, for burning of muscle is not followed by intoxication (Eijkman and v. Hoogenhuyze[1]). Numerous investigators have reported finding poisonous substances in the blood, tissues or urine of burned men and animals, but the reports disagree widely in details. Thus Dietrichs states that the blood of burned animals contains hemolysins and agglutinins, which could not be corroborated by Burkhardt[2] or by Pfeiffer.[3] The latter, however, finds that the urine, serum and organs of burned animals contain substances poisonous for the same and for different species, which is in accord with the results of numerous earlier investigators. The poisons are neurotoxic and necrogenic in their properties, and act without a period of incubation. Apparently, according to Pfeiffer, they are not ptomains, nor yet pyridin derivatives, as many investigators have contended, but resemble more closely the labile poisons of snake venom. The neurotoxic substance is more thermostable than the necrogenic substance, which is very easily destroyed by heat. Pfeiffer believes it probable that the poisons are derived from the splitting of proteids altered in composition by the heat burning. The hemolysis he attributes to direct injury to the blood in its passage through the heated area, and not to the action of poisons; this is very possible, since red corpuscles fragment after being heated to 52°, and may be seriously impaired functionally at 45°. There are many authors, indeed, who consider the blood changes the chief cause of death, but the weight of evidence is in favor of the theory of the development of toxic substances in the burned skin.

In spite of Pfeiffer's researches, however, the nature of these poisons must be considered as completely unknown, for numerous other observers have described "peptotoxins" (Fraenkel and Spiegler); ptomains (Kijanitzin, Ajello and Parascendolo), and pyridin bases (Fraenkel and Spiegler, Reiss). It remains also to be determined if the poisons are of such a nature that an immune serum can be obtained for them.

1. Virchow's Arch., 1906, vol. clxxxiii, p. 377. THE JOURNAL A. M. A., p. 1406.

2. Arch. klin. Chir., 1905, vol. lxxv, p. 845.
3. Virchow's Archiv., 1905, vol. clxxx, p. 367.

OCCURRENCE OF MENINGOCOCCI IN THE NASAL CAVITIES.

That so-called epidemic cerebrospinal meningitis is caused by a special micrococcus, the meningococcus (*Diplococcus intracellularis meningitidis*) is now generally accepted as an established fact. The manner in which this form of meningitis is disseminated and the portal of entry of the meningococci are, however, as yet not thoroughly understood. Recent investigations, especially in this country, indicate that probably the nasal cavities are important points not only of entrance, but also of escape of the meningococcus. Until less than a year ago the observations on the occurrence of meningococci in the nasal mucus in meningitis cases were rather unsatisfactory and indefinite. During the last epidemic of meningitis in New York, the opportunity to investigate this point was used to very good advantage by Goodwin and von Sholly,[1] who isolated meningococci from the nasal mucus in 50 per cent. of meningitis cases during the first two weeks of the disease. These

1. Jour. Infect. Dis., 1906, supplement No. 2, p. 21.

investigators also studied the nasal mucus of 45 healthy individuals living in close contact with meningitis patients, with the valuable result that meningococci were found in 10 per cent. Of 55 medical students not a single one gave organisms that corresponded fully to the meningococcus. At the same time that the epidemic was running in New York, a few cases of meningitis also appeared in Chicago, and Davis[2] demonstrated typical meningococci in the nose and pharynx of one patient. Hence the occurrence of meningococci in the nasal mucus in meningitis patients and in those coming in close contact with them may be regarded as definitely settled.

Now there is a more or less direct connection between the lymph spaces of the nasal mucosa and the cerebral membranes through which infection may take place and possibly also elimination of the cocci. It is also possible that the meningococci may enter the general circulation from the nasal lining as well as other parts of the respiratory tract and become localized later in the cerebrospinal membranes. Elser[3] recovered the meningococcus in nearly 25 per cent. of the cases examined, and he believes that general blood invasion can be demonstrated in a large proportion under favorable conditions. It is consequently possible also that the meningococcus may be deposited in the nasal mucosa from the circulating blood and thus reach the external world and secure the necessary opportunity to perpetuate itself by entering a new host.

Be this as it may, the occurrence of meningococci in the nose of patients with meningitis and their associates indicates the necessity of careful isolation of such cases, not merely during the early weeks of the disease, as suggested by Goodwin and von Sholly, but, if possible, until such time as there is good reason to believe from negative results of examinations of the nasal mucus that the nose is free from meningococci. Furthermore, nurses and others who remain in close contact with such cases should not be allowed to go about until it is known that they also do not carry meningococci in the nasal mucus and thus are liable to become the unwitting disseminators of a terrible disease. Whenever opportunity offers, the study of the occurrence of meningococci in the nasal cavities should be continued and extended to the throat as well.

THE INFLUENCE OF LIGHT IN THE PRODUCTION OF CANCER OF THE SKIN.

It seems to be a well-known fact that the skin in certain individuals is abnormally sensitive to the chemical or actinic rays of light. As pointed out recently by Hyde,[1] this hypersensitiveness may be evidenced in the production of either hyperemia, pigmentation, telangiectasis, atrophy, hyperkeratosis or cancerosis of the skin. At times, though rarely, these different forms of reaction to the same influences may occur in one and the same person and then occasionally in a regular order of succession. This is the case in the rare disease known as xeroderma pigmentosum, a disease of childhood; here hyperemia is followed by pigmentation of the exposed parts of the body and eventually telangiectasis, spots of atrophy and of warty outgrowths (hyperkeratosis) develop and finally typical, usually multiple carcinoma.

In adults analogous processes are relatively more frequent and develop usually after the middle periods of life. Hyde brings forward strong statistical evidence showing that in the colored races pigmentation of the skin appears to provide a relative immunity to cutaneous cancerosis. He furthermore makes the very interesting deduction that colored races seem to suffer less than the whites from cancer of other organs than the skin and suggests that this relative immunity may be the result of the "protection from the actinic rays of light furnished by the pigment of the integument."

The observations and deductions here epitomised emphasize the influence of light on the biologic chemistry of cells, especially the cells in the human skin. They may be cited to illustrate also how abnormal cellular processes, essentially chemical in nature, may lead to the development of carcinoma. They serve, therefore, to direct our attention again to the chemical nature of the problem of the cause of cancer in the recent discussion of which the tendency to disregard the necessity of a parasitic etiologic hypothesis is becoming more and more apparent. This tendency is receiving strong support also from the results of the experimental transplantations of carcinoma to which it is planned to make more extended reference in the future.

PROVISION FOR EPILEPTICS.

Any one who has witnessed the utter disregard for the welfare of epileptics whose disease forces them to become public charges in county alms and poor houses and in institutions for the insane, in which they are an incident and not a factor in the life of the place, must have been forcibly struck with the necessity for a wholly different type of public care for this unhappy class. Students of epilepsy in the United States and abroad place the proportion of epileptics to the population in general at one to five hundred. If this is true, there are not less than 160,000 epileptics in the United States—less than 3,000 of whom are under proper state care at this time, not including those in institutions for the insane. While every state has one or more hospitals or asylums for the enlightened care and treatment of their insane, only five states have made provision for their dependent epileptics—New York, Ohio, Massachusetts, New Jersey and Texas, while we understand that Indiana is about to make such provision. A meeting was held recently in Chicago with the object of stimulating public interest in the establishment of a colony for epileptics in Illinois. It is to be hoped that the movement

2. Ibid., 1905, vol. ii, p. 602.
3. Jour. Med Research, 1905, vol. xiv, p. 89.
1. American Journal of Medical Sciences, January, 1906; abstracted in THE JOURNAL, Feb. 17, 1906, p. 541.

may broaden out until the efforts result in the establishment of such an institution not only in Illinois, but in every large state in the Union. It has been satisfactorily demonstrated that the best way to care for epileptics is on a large tract of land and in comparatively small and wholly detached cottages. Adequate classification plays a leading rôle in the institutional treatment of these people, which makes it essential that any successful institution for them must be on the colony, village or community plan.

THE VITALITY OF THE TYPHOID BACILLUS IN FLOWING WATERS.

The contention made in the Chicago drainage canal suit that typhoid germs are short lived in natural flowing waters seems to be supported by some recent experiments made at the hygienic laboratory of the University of Wisconsin. According to the accounts received, the attempt was made to test the question under as nearly the natural conditions as possible, and the results seem to show that in ordinary flowing water the germs live only from eight to ten days, while in sewage polluted water they live scarcely half that time, being apparently killed off by other organisms. In fact, it is only the more resistant minority of the germs that reach the ten days' limit, and the experiments are said to have been remarkably uniform in this respect. While there may be exceptional cases of longevity of the typhoid bacillus, particularly in culture experiments, the evidence is accumulating that it is a short-lived organism in water under natural conditions.

HOTEL ACCOMMODATIONS—IMPORTANT.

The members of the subcommittee on hotels for the Boston session are anxious that every one shall be provided with good accommodations, either in a hotel or in a first-class boarding house. To arrange for such accommodations, however, the committee must attend to the matter before the arrival of those to be accommodated. In behalf of the committee and at its request, we urge those who expect to attend the Boston session to write to the secretary of the hotel committee, Dr. D. D. Scannell, 366 Commonwealth avenue, Boston, stating what is required. Prompt action in this matter on the part of each individual will receive prompt action on the part of the committee. Although none need fear that accommodations will not be found, even after one arrives, it is not worth while to take chances by such delay.

Medical News

CALIFORNIA.

Personal.—Dr. Perry F. Bullington, Oroville, has been elected president of the Board of Health of Butte County.——Dr. J. De Barth Shorb and wife, Los Angeles, left for Europe May 2.

Distribution of Medicine Samples.—The city trustees of Chico have passed an ordinance prohibiting the distribution of samples of medicine, either by hand or by throwing into yards, where children might find and eat them.

Vital Statistics for March.—During March, 1,950 births, 2,523 deaths and 1,471 marriages were reported. The mortality of the month is equivalent to an annual death rate of 16.1 per 1,000. Tuberculosis, the principal cause of death, caused 474 deaths; diseases of the circulatory system, 330, and diseases of the respiratory system, 307, of which 231 were due to pneumonia. Of the epidemic diseases, meningitis caused 37 deaths; measles and influenza, 32; typhoid fever, 19; diphtheria, 17; and smallpox, 7.

DISTRICT OF COLUMBIA.

Personal.—Dr. May D. Baker, Washington, is paying a visit to Los Angeles, Cal.——Dr. G. Brown Miller, Washington, has been elected secretary of the Central Dispensary in the Emergency Hospital.

Examiners' Terms Expire.—The health officer of the district has called the attention of the examiners to the fact that the term of office of Dr. Joseph F. Wall, a member of the Board of Medical Examiners, and a police surgeon, will expire on June 15 and that steps would be taken to appoint his successor. The term of a member of a Board of Homeopathic Examiners and Board of Eclectic Examiners expires on June 30.

Opposes Osteopathy Bill.—The Medical Society of the District of Columbia has made an emphatic protest against the enactment of Senate Bill 251 introduced by Senator Foraker of Ohio, which seeks to regulate the practice of osteopathy, to license osteopathic physicians, etc., in the District of Columbia. The arguments that the society advances are as follows: First, the bill, if enacted, will lower all existing medical school standards and thus defeat the very object for which medical practice laws were provided, namely, to guard the people against the effects of imposition and ignorance; second, the bill seeks to legalize and regulate the practice of osteopathy without defining what constitutes the practice of osteopathy, and until this is done Congress can not undertake to legislate intelligently; third, why should a special board be created, composed of five physicians in good standing, adherents to the osteopathy system of practice? fourth, it is conceded that Congress has a right to recognize other schools or sects of medicine than the so-caller regular, homeopathic or eclectic systems of practice; and, fifth, refusal on the part of the advocates of the proposed legislation to accept the suggested amendment, indicates preference for low standards and corresponding danger to the public.

ILLINOIS.

Bid for Consumptive Hospital.—The lowest bid for the construction of the consumptive hospital at the Cook County Institutions, Dunning, was $21,430.

Smallpox.—Three cases of smallpox have been reported from Zion City.——A new outbreak of smallpox has been reported at Rushville.——Smallpox has broken out in a children's home near Sterling. The institution has been placed under strict quarantine.

Physicians' Defense Company Not an Insurance Company.—The Appellate Court of Illinois in an opinion handed down May 8, holds that the Physicians' Defense Company of Fort Wayne, Ind., is not an insurance company under the laws of Illinois, as the company does not undertake to indemnify the holder of its agreement against judgment, but to pay such judgment or any part of it, not even the costs of suit, although in making defense it may have to be outgrown the sum it receives. It does not insure the holder against suits for malpractice. It merely makes a defense against them when they are brought and provides legal services for its patrons.

Chicago.

Bequest to Hospital.—By the terms of the will of the late Charles W. Brega, $5,000 is bequeathed to St. Luke's Hospital.

Smallpox.—A case of smallpox was discovered by the health department, May 11, in Lake View. The source of the infection has not yet been located.

Midwife Released.—Mrs. Maggie Motzna, a midwife charged with the murder of Mrs. Ida Brocknow by an illegal operation, was declared not guilty by a jury in Judge Honore's court, May 10.

Fined for Liquor Selling.—George Campbell, a Pullman druggist, charged with selling liquor without a license, was fined $100 and costs on one charge, and costs on the three other charges brought against him.

Personal.—Dr. and Mrs. Daniel R. Brower have returned from Lisbon.——Dr. Hugh T. Patrick has left Lisbon for Paris, and will spend the summer abroad.——Dr. Henry Gradle has returned from the International Medical Congress, Lisbon.——Dr. Camillo Volino has been seriously ill from septicemia, due to a scratch received during an operation.

Physicians on Ambulances.—It is announced that the ambulances of the police department will soon be turned over to the city health department in accordance with the plans of the health commissioner and the chief of police. The eight ambulances which will be transferred will each be under charge of a physician.

Deaths of the Week.—During the week ended May 12 there were 583 deaths, 10 less than for the previous week and 133 more than for the corresponding week of 1905. This is equivalent to an annual death rate per 1,000 of 14.84. Pneumonia still leads the death causes with 109; consumption caused 55 deaths, or 20 less than the previous week; nephritis, 48; violence, including suicide, 39; heart diseases, 37; nervous diseases, 27; acute intestinal diseases, 26; cancer, 24; scarlet fever caused 11 deaths; typhoid fever, 9 deaths; diphtheria, 8; measles, 7; whoopingcough, 5, and influenza, 4.

Cheaper Antitoxin.—Last week we published an item based on matter appearing in the *Health Bulletin* of Chicago, to the effect that a private institution was "supplying the city with antitoxin at $1.50 per 3,000 units as against $5.25 for 3,000 units, the sum charged by the alleged antitoxin trust." Such a statement as this should not have appeared, as it does not represent facts. The institution referred to is supplying antitoxin at $1.50 to the Department of Health, which, in turn, retails it at $2.25 per 3,000 units. Several commercial firms have offered the city the same number of units for practically the same amount. We make this retraction in justice to all concerned.

MARYLAND.

Baltimore.

Memorial Room.—A memorial room has been founded at the Baltimore Eye, Ear and Throat Charity Hospital of the late Dr. Russell Murdoch, who was a founder and a member of the hospital staff.

University to Move.—The Baltimore University proposes to remove from East Baltimore to the northern section, where it has purchased a new site. A building of three stories, embracing hospital, college and dispensary to cost about $45,000, will be erected.

Typhoid in Suburb.—There have been 56 cases of typhoid fever reported at Hampden, a northern suburb of the city. It is supposed to have arisen from contaminated milk and is said to be now on the decline. Only 21 cases were reported for the entire city during the week.

Milk Exhibition.—The Maryland Milk Exhibition, the forerunner, it is believed, of many similar ones to be held throughout the country, opened at McCoy Hall, Johns Hopkins University, May 7, and continued through the week. On the opening evening Dr. Charles Harrington, Boston, secretary of the State Board of Health of Massachusetts, lectured on "The Necessity of Reform in the Production and Methods of the Distribution of Milk." A model kitchen showed the many uses to which milk may be put in cooking and prepared appetizing dishes for visitors. Numerous addresses were delivered.

Personal.—Dr. William H. Howell, dean of the Johns Hopkins Medical School, will spend the summer on Casco Bay, Maine.——Dr. Robert B. Slocum, one of the house officers at the Johns Hopkins Hospital, has resigned to take charge of the Walker Hospital, Wilmington, N. C., and has been succeeded by Dr. P. K. Gilman.——Dr. L. McLane Tiffany is spending May at his country seat in Accomac County, Va.——Dr. Harry T. Marshall, instructor in pediatrics, Johns Hopkins University, has accepted a position as pathologist in the United States Bureau of Science at Manila, and will sail from New York May 19. His place on the Board of Supervisors of City Charities has been filled by the appointment of Dr. J. Whitridge Williams.——Dr. Joseph A. Chatard sails for England May 31, and will spend some time at Oxford.

MASSACHUSETTS.

Hospital Opened.—The formal opening of the two new buildings of the Newton Hospital, Ellerson Hall and Harriet Gould Payne Domestic Building, took place May 1.

Dinner to Medical Examiners.—A complimentary dinner to the medical examiners of the Massachusetts Catholic Order of Foresters was given at the Brunswick Hotel, April 24. Dr. Francis J. McQuermy presided, and Dr. Frederick C. Shattuck spoke on "Present Day Aspects of American Living."

Birth Insurance a Failure.—At the request of Attorney-General Malone a receiver has been appointed for the American Birth Insurance Company. This was a novel assessment insurance scheme, backed by many prominent Boston women, which has failed because the birth rate exceeded that anticipated. There is said to be some $50,000 or $60,000 insurance outstanding.

Bowditch Resigns.—Dr. Henry Pickering Bowditch, for 35 years a teacher in Harvard University Medical School, has resigned his position as professor of physiology and will retire at the end of this year. He is a recognized authority both in this country and in Europe. He has received honorary degrees in Leipzig, Cambridge, Edinburgh and Toronto. He is a member of the leading physiological societies of the world.

Society Election.—The Norfolk District Medical Society elected, May 8, in addition to its quota of 29 councilors of the Massachusetts Medical Society, the following officers for 1906-1907: President, Dr. Samuel Crowell, Dorchester; vice-president, Dr. Arthur P. Perry, Jamaica Plain; secretary and librarian, Dr. James C. D. Pigeon, Roxbury; treasurer, Dr. Edward G. Morse, Roxbury, and commissioner of trials, Dr. William Noyes, Dorchester.

Personal.—At the annual meeting of the Worcester North District Medical Society, Dr. Edward A. Sawyer, Gardner, was re-elected councilor, and Dr. Atherton P. Mason, Fitchburg, elected president.——Dr. John Dixwell has been re-elected president of the New England Home for Deaf Mutes.——Dr. George P. Howe, Lawrence, has been put in charge of the medical department of the Anglo-American Polar expedition which sails from Victoria, B. C., some time this month.——Dr. John A. Houston, Northampton, was struck by a street car in Washington, April 28, and suffered a concussion of the brain and a fracture at the base of the skull.

NEW JERSEY.

Society Officers.—At the annual meeting of the Salem County Medical Society, May 10, the following officers were elected: President, Dr. Frank B. Husted; vice-president, Dr. Nathaniel S. Hires; secretary and treasurer, Dr. Henry Chavanne, of Salem.

Entertains Medical Club.—Dr. Emory Marvel, Atlantic City, entertained the board of directors of the Medical Club of Philadelphia at a dinner, May 5. After the dinner a reception was held at which many of the leading physicians of Atlantic City were present. Among those present were Drs. Wharton Sinkler, Edward E. Montgomery, L. Webster Fox, T. Chalmers Fulton, Edward L. Duer, James Van Buskirk, J. Gurney Taylor, Gwilym G. Davis, Wilmer Krusen and Louis H. Adler, of Philadelphia, and Dr. Harry Whitcomb of Norristown.

Personal.—Dr. Francis De L. Gray, president of the Jersey City board of health, has resigned.——Dr. Walter A. Taylor, Trenton, has been elected a member of the medical staff of Mercer Hospital. At a meeting of the staff held recently Dr. William Elmer was elected medical director and president; Dr. William A. Clark, vice-president; Dr. Charles F. Adams, secretary, and Dr. George H. Parker, registrar.——Dr. John H. Finnerty has been appointed a member of the Jersey City board of health for a term of three years, vice Dr. Joseph M. Rector.

NEW YORK.

Matteawan Hospital.—There are now 683 inmates in this institution which cares for insane criminals.

Smallpox at Wallkill.—There are at present 6 patients with smallpox being cared for at the isolation hospital in Wallkill.

Personal.—Dr. Albert Vanderveer of Albany, who was elected a member of the State Board of Regents by the last legislature, took the oath of office on May 10.——Dr. Chester Waterman, Ogdensburg, has been appointed to the house staff of the Manhattan State Hospital.

For New Hospital.—Columbus O'Donnell Iselin has offered $40,000 for a hospital in New Rochelle, providing the citizens of that city will raise $60,000 so that a modern fireproof structure can be erected. The local hospital management has already subscribed $20,000 of the required amount.

Result of New York Referendum.—Section 7 of the agreement underlying the consolidation of the Medical Society of the State of New York with the New York State Medical Association, reads as follows:

"It is further covenanted and agreed by the parties hereto, that as soon as practicable after the entry of an order for the consolidation of the corporations, the following proposition shall be submitted by referendum to the vote of the members of the society, namely:

"'The principles of medical ethics of the American Medical Association, being suggestive and advisory, shall be the guide of members in their relations to each other and to the public.'"

Under date of May 11 Dr. Wisner R. Townsend writes:

"Referendum votes were sent to 6,352 members on April 27. The vote was canvassed May 10, at 8 p. m., with the following result: Votes cast in accordance with the provisions of the referendum, 3,525, of which 3,307 voted 'yes,' 197 'no,' 17 defective, 1 duplicate, 3 letters returned by the postoffice owing to imperfect address. Eighty votes were received since the expiration of the referendum. These envelopes were not opened."

New York City.

Gift for Columbia.—Edward S. Harkness has given $2,700 to the morphologic museum at the medical school.

Proposed West Side Hospital Disapproved.—The bill providing for a hospital similar to Bellevue on the west side of town, between Twenty-third and Thirty-fourth streets, has been vetoed for the third time by the mayor. The measure is mandatory and for that reason was rejected.

Honor Professor Duehrssen.—A special meeting of the German Medical Society was held at the New York Academy of Medicine, May 15, in honor of Professor Dührssen, of Berlin, who comes to America as the guest of the American Medical Association, who delivered an address on the subject of "Modern Problems in Diseases of Women." Professor Dührssen operated at the Lebanon Hospital on May 10.

Personal.—Dr. Jokichi Takamine has been decorated by the Mikado with the Fifth order of the Rising Sun in consideration of his researches and discoveries in applied chemistry.——Dr. A. M. Fernandez de Ybarra delivered a lecture on "The First Written Document About the Flora, the Fauna, the Ethnology and the Anthropology of America" before the biologic section of the New York Academy of Sciences, March 5.

New Orthopedic Hospital.—The Jewish Hospital for Deformities and Joint Diseases which is to provide treatment for patients in the district lying north of Central Park, has been completed and will be ready for the treatment of patients before the end of June. The need of this institution is shown by a recent census of the public schools, when more than 6,000 children were found suffering from deformities. A large number of these are curable. The medical head of the hospital is Dr. Henry W. Frauenthal.

Dispute Over New Bellevue.—A controversy between the State Charities Board and the trustees of Bellevue and the Allied Hospitals concerning the plans for the new hospital will tie up the work for some time. The plans provide for a building which will have about 2,400 beds, while the board holds that hospitals of such a size are unwieldy and that two hospitals of lesser capacity would be preferable. Attorney-General Mayer has rendered an opinion sustaining the authority of the state commissioners, but the trustees of Bellevue still refuse to submit the plans to the state body. The city has not yet acquired the additional land which is wanted for enlarging the building.

Contagious Diseases.—There were reported to the sanitary bureau for the week ended May 5, 1,348 cases of measles, with 39 deaths; 375 cases of tuberculosis, with 193 deaths; 339 cases of diphtheria, with 49 deaths; 231 cases of scarlet fever, with 21 deaths; 35 cases of whooping cough, with 9 deaths; 33 cases of cerebrospinal meningitis, with 32 deaths; 19 cases of typhoid fever, with 7 deaths; 103 cases of varicella, and 6 cases of smallpox—a total of 2,489 cases, with 350 deaths. The hospitals for contagious diseases are overcrowded. In the week ended May 8 there were 73 cases of contagious and infectious diseases taken from Ellis Island. This record is lower than that of several preceding weeks. The phenomenal number of immigrants accounts for the larger number of contagious diseases taken from Ellis Island.

Rockefeller Institute Opened.—This institution, which was founded in 1901 by John D. Rockefeller, having for its purpose "the advance by investigation of the science of medicine," was formally opened on May 11. Addresses were made by President Charles William Eliot of Harvard University, President Nicholas Murray Butler of Columbia University, and the president and secretary of the institute, Dr. William Henry Welch and Dr. Luther Emmett Holt. Dr. Holt outlined the history of the institute, which when completely equipped could accommodate 50 workers. The laboratories are for investigation in experimental pathology, bacteriology, physiology, physiologic and pathologic chemistry. At present there are 12 experimenters at work under the supervision of Dr. Simon Flexner, director of laboratories. All the air drawn into the various suites of laboratories and living quarters of animals used in experiments is filtered. There is only one other institute of the kind in the work that is as fully equipped as this and that is in Germany and is said to be no better. The institute not only carries on experiments in its laboratories, but awards money grants to those engaged in work elsewhere. Grants are awarded on application to the board of directors. Applicants for aid in medical research are required to tell why they need assistance, the nature of the problems on which they are working and their qualifications. The results of experimental work are published in the *Journal of Experimental Medicine*, which is issued bi-monthly by the institute.

OHIO.

Typhoid Fever on the Increase.—Typhoid fever has markedly increased in Cincinnati, 24 cases having been reported last week.

Personal.—Dr. John Uri Lloyd, Cincinnati, who was a delegate to the International Chemical Society, has been quarantined at Aden, Arabia, having been exposed to bubonic plague.——Dr. William C. Harris will be in charge of the emergency hospital at the Cincinnati Fall Festival.

Site for State Hospital Secured.—The ground for the new State Hospital for the Criminal Insane has at last been purchased. It consists of a farm of 618 acres situated north of Lima, Ohio. The purchase price was $62,500. No provision was made by the General Assembly to do more than to secure the land, and the trustees of the proposed institution have not as yet been named.

PENNSYLVANIA.

Philadelphia.

Notice.—The section on general medicine of the College of Physicians announces that on account of the proximity of the meetings of several national medical associations, the next meeting of the section will be held in October.

Charity Report.—The annual report of the Union Benevolent Association shows there were 5,000 applications for aid, of which 265 were refused and 257 referred to other societies. Officers of the society made 6,197 visits during the year to investigate the conditions of persons in need of aid, and 151 sick individuals were given attention.

Personal.—Dr. Alfred Gordon was appointed associate in nervous and mental diseases in Jefferson Medical College, May 8.——Dr. Ross Skillern and wife sailed for Europe, May 8.——Dr. William A. Hughes, of the University of Pennsylvania; Dr. Charles A. Service, of the Jefferson Medical College, and Dr. C. Lincoln Furbush, of the Medico-Chirurgical College, conducted the examinations of 120 applicants for interneships in the Philadelphia Hospital, May 12.——Dr. O. L. Wingate was acquitted of the charge of assault by the Court of Quarter Sessions, May 9.

Federation of Jewish Charities Report.—At the fifth annual meeting of the Federation of Jewish Charities, May 10, the reports presented show that from 2,065 members the subscriptions amounted to $145,000. This is an increase of $24,000 over the previous year and an increase of $50,000 over the maximum annual subscription before the federation. The sum of $135,550 had been distributed among the following constituent charities for the year ended April 30: Jewish Hospital Association, $34,000; Jewish Foster Home and Orphan Asylum, $22,000; United Hebrew Charities, $33,000; Hebrew Education Society, $6,600; Jewish Maternity, $9,000; Jewish Immigration Society, $800; Young Women's Union, $12,500; Hebrew Sabbath School Society, $3,250; National Farm, $6,400; National Jewish Hospital for Consumptives, Denver, $3,000, and the Alliance Israelite Universelle, $500.

Health Report.—The total number of deaths reported for the week reached 492. This is a decrease of 10 from the number reported for last week, and an increase of 37 over the number for the corresponding week of last year. The principal causes of death were: Typhoid fever, 26; measles, 9; pertussis, 13; diphtheria, 9; consumption, 63; cancer, 21; apoplexy, 21; heart disease, 54; acute respiratory disease, 74; enteritis, 27; hepatic cirrhosis, 5; Bright's disease, 41; appendicitis, 7; suicide, 6, and accidents, 16. There were 415 cases of contagious disease reported, with 36 deaths, as compared with 364 cases and 26 deaths in the preceding week. Typhoid fever is still slightly on the increase, 303 cases being reported, with 26 deaths, as compared with 243 cases and 14 deaths reported in the previous seven days. There was one new case of smallpox reported.

TENNESSEE.

"Patent-Medicine" Motion Tabled.—At a recent meeting of the Memphis and Shelby County Society, a resolution which called for punishment by suspension from the society of any member

holding stock in any so-called "patent-medicine" concern and any member engaging in contract practice except as government official, surgeon of and examiner for a life-insurance company, was tabled after little debate.

Personal.—Dr. Frank A. Jones has been elected professor of physical diagnosis and clinical medicine in the Memphis Hospital Medical College, succeeding Dr. Dudley D. Saunders, retired. Dr. James B. McElroy succeeds Dr. Jones as chief of clinic at East End Dispensary and as demonstrator of physical diagnosis in the college.——Dr. W. S. Nash, Knoxville, has been very ill for several days.——Dr. G. B. Gillespie, Covington, was thrown from his buggy May 2 and sustained severe bruises of the face and breast and a fracture of the nose.

Commencements.—Chattanooga Medical College, the Medical Department of Grant University, held its seventeenth annual commencement exercises April 30. Dr. John R. Rathmell, dean, made the introductory remarks, Rev. Howard L. Jones delivered the address and Rev. John H. Race, D.D., conferred degrees on a class of 33.—The annual commencement exercises of Memphis Hospital Medical College were held April 27, when the Hon. William H. Carroll, president of the board of directors, conferred degrees on a class of 80. Hon. T. U. Sisson delivered the address to the graduates.——The Medical Department of Vanderbilt University, Nashville, held its annual commencement exercises May 1, when a class of 38 received diplomas. Dr. William H. Witt delivered the faculty address and Dr. Richard Douglas the doctorate address. Chancellor Kirkland conferred the degrees on the graduating class.——The Medical Department of the University of Tennessee, Nashville, held its annual graduating exercises May 1. Dr. Paul F. Eve acted as master of ceremonies. Dr. Perry Bromberg delivered the charge to the graduates, and Prof. Brown Ayers conferred degrees on a graduating class of 25.

TEXAS.

Fined for Illegal Practice.—"Dr." Oscar Ferguson, Marshall, was convicted April 2, in the County Court of Harrison County, of illegal practice of medicine, and was fined $50 and costs.

New College Contemplated.—It is reported that Fort Worth is to have a new medical college to be known as the Fort Worth College of Physicians and Surgeons, and that Dr. Frank D. Boyd has been selected as dean of the institution.

College Election.—At the annual meeting of the faculty and stockholders of the Medical Department of Fort Worth University, May 5, the following officers were elected: President, Dr. Julian T. Field; vice-president, Dr. James Anderson, secretary, Dr. Ira C. Chase; dean, Dr. Frank Gray, and directors, Drs. Frank D. Thompson, James Anderson, Bacon Saunders, William R. Thompson and Frank Gray. During the year 194 students were enrolled and a class of 23 was graduated.

Commencements.—The third annual commencement of the College of Physicians and Surgeons, Dallas, was held April 5, when diplomas were presented to a graduating class of 21.——The twelfth annual commencement of the Medical Department of Fort Worth University was held May 10. Dr. William R. Thompson delivered the faculty address; Dr. Gause W. Covington delivered the valedictory address and Rev. Dr. Fiedler, president of the university, awarded the diplomas to a class of 23.——The sixth annual commencement of Baylor University College of Medicine, Dallas, was held May 1. President Dr. S. P. Brooks awarded diplomas to a class of 8. Rev. George W. Truitt, in his address, announced that the erection of a new medical school for the university was assured.——The commencement exercises of Southwestern University Medical College, Dallas, were held May 4, when a class of 4 received diplomas.

Personal.—Drs. Thomas J. Wagley, James H. Happell and William S. Ball have resigned as surgeons of the Gulf, Colorado and Santa Fe Railroad at Cleburne. Dr. Mills Dennis, Temple, has been appointed to succeed Dr. Wagley, and Dr. D. Strickland, Cleburne, has been appointed local surgeon of the road.——Dr. Francis M. Hicks, San Antonio, who was operated on recently at Johns Hopkins Hospital, has returned home.——Dr. George W. Larendon, Houston, Dallas, has been appointed state health officer of Texas, vice Dr. William M. Brumby, resigned.——Dr. Jesse E. Baldwin, Dallas, has been appointed health officer of Dallas County, vice Dr. Thomas B. Fisher, resigned, to take up the duty of health officer of Dallas.——Dr. Nelson A. Olive has been elected president of the Waco Board of Health.——Dr. Robert W. Noble, Temple, fell from a porch April 26, fracturing his arm.——Dr. John M. Colley, Palestine, was thrown from his buggy April 25 and received a severe scalp wound and fractured a rib.

PRESENT CONDITIONS IN SAN FRANCISCO.

The Work of the Profession in Averting an Epidemic.

Dr. Joseph B. Greene writes:

The daily press has attempted to describe the calamity, but no one at a distance can fully appreciate the horror of the scene. Fortunately, the number of deaths was exaggerated, but it will be some time before the death list is complete on account of the fire following so soon in the track of the earthquake. At the present time the remains of some of the victims lie buried in the ruins, awaiting the removal of débris, before they can be properly buried. San Francisco had a considerable floating population, who suffered largely from the destruction of hotels and boarding houses in the down-town district. The loss of life is variously estimated from 500 to 1,400. Had the earthquake occurred during the busy hours of the day the loss of life would have been appalling.

It was fortunate that the Army was on the scene ready to step in and to preserve order. Not only did they do this, but they dispensed food and clothing to all in need. Tents and blankets were at once supplied, so there was comparatively little real suffering. The large Army General Hospital was thrown open for the reception of patients who were sick or injured. At present everything is moving along smoothly, and the needy are being cared for with a minimum amount of leakage and waste.

No class of men suffered more proportionately than the physicians of San Francisco. With an unselfishness common to the profession, they were found caring for the wounded when their offices were going up in smoke. Not only have they suffered the loss of their offices and homes, but their practices have been scattered to the four winds. It will be some time before affairs have been adjusted and the physicians are again in a position to recover their practices. Grateful appreciation has been felt and expressed at the kind offers of assistance to the medical profession from the large medical centers. The County Medical Society met on the evening of May 3, with Dr. W. I. Terry, president, in the chair. It was decided that relief was to be distributed to all licensed physicians, regardless of school. Of course, all quacks are to be excluded. A general committee was appointed, with Dr. Terry *ex officio* chairman.

From this general committee will be selected committees on (1) finance, (2) supplies, (3) distribution. Arrangements have been made for the committees' headquarters to be at the Cooper Medical College.

From a sanitary and epidemic standpoint, San Francisco is most fortunate. Typhoid fever is naturally the disease most to be dreaded, but fortunately the number of cases occurring in the city prior to the earthquake and fire was not great. In camp, however, the number will be greatly increased, in spite of orders to boil all drinking water. It is always easier to issue such orders than to see that such instructions are carried out. The profession is familiar with the great loss of life from typhoid fever in the Army during the Spanish-American War. This occurred, too, among soldiers who were supposed to be under strict military discipline. The science of sanitation has advanced somewhat since that time, for we now know what an important part the flies play in the transmission of typhoid fever. Every precaution will be taken with the feces and urine to prevent contamination through the means of flies. The time is now at hand for an increase in the number of typhoid cases. It is to be hoped that our fears are groundless, and that the dread of an epidemic will never be realized.

Plague has given the health authorities some concern, though it would seem that the danger can be averted. Chinatown, which nurtured cases of plague so long, has been burned, and it is likely the germs of this disease were consumed. It is probable that very few rats made their escape. The state health authorities have warned the people against infection from ground squirrels. Plague has occurred among these rodents for some time, and the last case was in a huntsman who had killed a squirrel and carried it in his pocket. It is not likely that Chinatown will be rebuilt in the heart of the city again, to be a menace to the public health as it was some

years ago when plague was present. The disease is so insidious, and our relations so direct with the Orient, where plague prevails almost constantly, that it would be a great mistake to allow the Chinese to resume their insanitary life in the heart of San Francisco.

The American White Cross First Aid Association sent from Chicago twenty-five physicians and seventy-five nurses, who arrived on the morning of April 26. This party, in command of Major. P. J. H. Farrell, reported at once to Colonel Torney of the Army on duty at the general hospital. The party was assigned to tents and placed under strict military discipline. The doctors and nurses were assigned to various duties as directed by the Army surgeons. Most of the physicians were assigned to sanitary work, though some did medical and surgical work. The nurses made themselves useful at various stations in and near the city. Six nurses were at once assigned to cases in the smallpox hospital.

An Appeal From San Francisco Physicians.

A committee appointed by a mass meeting of physicians held in San Francisco, May 3, issues the following appeal:

"The members of the medical profession in San Francisco, with the true spirit of their noble calling, have voluntarily rendered great service to the sick and suffering of this stricken community. A large portion of these physicians, more than 1,000, have lost either their homes, offices, books and instruments or all of these. This committee has been appointed to receive contributions of medical supplies, books, instruments, clothes and moneys in order to help the needy start life anew and equip them to earn their livelihood in the exercise of their profession.

"We appeal to the generous-hearted throughout the land to come to our assistance and help the members of a profession who at all times, when called on, have given their aid freely and willingly to suffering humanity.

Direct all communications and donations to the relief committee of the physicians of San Francisco, Lane Hospital, San Francisco. W. I. Terry, Pres. S. F. Co. Med. Soc., Chairman *ex officio*; T. W. Huntington, Emmet Rixford, H. C. Moffitt, H. J. Kreutzmann, Philip King Brown, J. W. Ward, L. M. F. Wanzer, Julius Rosenstirn, F. W. Lux, Secretary.

The above committee has issued the following to the physicians of San Francisco:

"Those of you who are in need of immediate assistance, please report at once to the medical relief committee at Lane Hospital, corner Webster and Clay Streets. The committee rooms will be open from 9 a. m. to 4 p. m. daily, Sundays excepted. In case your name is not in the last state register, be good enough to state from what college you are a graduate and when your license was issued. Address communications to the secretary, Dr. F. W. Lux."

The following subcommittees have been appointed:

Press Committee: J. Rosenstirn, Philip King Brown.

Finance Committee: T. W. Huntington, H. C. Moffitt, H. J. Kreutzmann.

Committee on Instruments, Books and Supplies: Philip King Brown, J. W. Ward, F. W. Lux.

Distribution Committee: Emmet Rixford, L. M. F. Wanzer, J. Rosenstirn.

Sanitary Conditions.

Passed Assistant Surgeon Rupert Blue, U. S. P. H. and M. H. Service, reported on the sanitary condition in Oakland and San Francisco on April 30. Immediately after the earthquake sanitary headquarters were established in Golden Gate Park, where conferences between the Medical Department of the Army, the Public Health and Marine Hospital Service and the state and city health authorities were held. A health commission had already been organized, consisting of Dr. James W. Ward, president; Dr. Simon Harvey Ragan and Dr. Hassler, of the San Francisco Board of Health; Surgeon Sawtelle and Passed Assistant Surgeon Dr. James H. Oakley, U. S. P. H. and M.-H. Service, and Drs. M. Ragensberger and M. K. Foster, representing the State Board of Health. Dr. Blue, having been elected a member of this commission, made an inspection of the refugee camps in Oakland, which at that time consisted mostly of wooden shacks with shallow latrines and open kitchens. These camps, however, are now being concentrated in healthy suburban sites, large tents are being used and latrines and sinks will have sewer connections. Since April 18 twenty cases of smallpox have been detected and isolated in Oakland. The number of refugees in Oakland is estimated at 30,000, and probably 4,000 of the Chinese of San Francisco have here found refuge. On April 29 Dr. Blue was placed in charge of the second sanitary district of San Francisco, which is bounded by the bay on the southeast and east, and by Market, Valencia and Mission streets on the north and west. It is the part of the city which suffered most from the earthquake and fire. In this district there were more than 30,000 people living in shacks, tents and other temporary abodes. Cooking was done in the streets, as all chimneys and water and sewer connections were destroyed. The water supply is inadequate and is not likely to be greatly improved in the immediate future. The proper disposal of sewage, garbage and refuse is also a serious problem. The shallow latrines are not protected from flies or animals and have no sewer or water connections. The public kitchens are open to flies and are in close proximity to heaps of refuse and uncovered latrines. To combat these conditions Dr. Blue recommends removal to healthy suburban sites with ample water and sewer connections and the use of tents instead of wooden shacks for housing; the immediate construction of large sanitary latrines, to be connected with the sewers, and, pending the change, the abundant use of chlorid of lime and crude carbolic acid in the holes formerly used, and the removal or burning of garbage.

The State Journal.

The May issue of the *California State Journal of Medicine* consists of only four pages and begins with a sad greeting, but states that the spirit of the physicians of California is in no wise daunted and that as there will be a newer and better and more beautiful San Francisco, so there will arise, Phœnix-like, a better and more useful *California State Journal of Medicine*. The *Journal* devotes nearly one-fourth of its space to a mention of the semi-centennial meeting of the Medical Society of California, which was untimely adjourned. The editor, Dr. Philip Mills Jones, 1230 Telegraph Avenue, Oakland, deserves much credit for his enterprise. He announces that both its foreign and domestic exchange list is lost and asks us to request by this notice that all exchanges should notify Dr. Jones as soon as possible.

System and Organization.

In an editorial, May 2, the San Francisco *Examiner* gives due credit to the Medical Department of the Army for its work in San Francisco. It says: "The value of system and organization was never better illustrated than in the work of the army doctors and surgeons in handling the emergency. . . . These military doctors did not hesitate to assume responsibility, and if San Francisco escapes an epidemic the major part of the credit will be due to the organization and system of the army's medical department and to the quick action of the medical men in charge of the Presidio. . . . When the injured were hastily transferred from the Mechanics Pavilion the Presidio General Hospital was forced to receive 100 patients in one hour, but there was not the slightest confusion. . . . Captain Kennedy, surgeon in charge, immediately closed the doors against all visitors. This was hard on anxious relatives and friends, but preserved quiet and discipline within the hospital at a time when quiet and discipline were absolutely essential. The 100 patients were operated on and cared for before the burning hospitals of the city began to throw their patients into the Presidio, and, when everything was confusion elsewhere, the 500 or more patients in the Presidio Hospital were treated as if earthquake and fire were problems of a far land. Military precision also proceeded in the important work of caring for the medical and surgical needs of the homeless and the sanitation of the refugee camps. Captain Truby was placed in charge of the refugees in Golden Gate Park, Captain Murtagh of those in Fort Mason and Captain Rutherford of the camp at the Presidio, and in each of these camps a staff of doctors and inspectors was organized, so that every patient had a physician at call and every cot was watched with care. The reports were sent through official channels to Colonel Torney, and as a result of this system the reports of death and disease in San Francisco show slight variations from the normal conditions. . . . Those who are going to have on hand the herculean task of upbuilding a ruined city may well take a lesson in what can be accomplished under system and organization. They have been given their lesson by the men of the army medical department, who took hold of an emergency as if they had been handling earthquakes and fire all their lives."

Physicians Come to the Rescue.

The physicians of Portland, Ore., have contributed $3.000 in cash and Lewis and Clarke Fair stock; the Essex North District (Mass.) Medical Society, $200; the Norfolk District Medical Society, $307, replacing the annual banquet; the Brooklyn Medical Club, $100; the Douglas County (Wis.) Medical So-

ciety, $40; the physicians' committee of Salt Lake City, $500 and abundant supplies; Montgomery County (Ohio) Medical Society, $100; Fresno County (Cal.) Medical Society, $200; Huntington County (Ind.) Medical Society, $10; Washington County (Pa.) Medical Society, $25; Mill Creek Valley (Ohio) Medical Society, $15; New Jersey State Homeopathic Medical Society, $25; Lehigh County (Pa.) Medical Society, $25, and Lewis County (N. Y.) Medical Society, $10.

No Danger of Plague.

The secretary of the State Board of Health announces that he does not think there is any danger of bubonic plague unless it be among people who, driven from the city, have gone into camp in the country. There will be no danger there, he says, if the people avoid contact with rats, squirrels, mice and similar animals.

Afflicted and Can Not Help.

The appeal for aid to physicians of San Francisco has received a reply from Russellsville, Ark. In this city a fire occurred January 15 which swept away the greater part of the city, and by reason of which the physicians of the community suffered to some extent and the loss of many was considerable. For this reason the physicians state that their hands are full in repairing their own losses without calling on aid from the outside.

No More Burials in County.

The Public Health Commission decided on May 5 that after June 1 no more interments should be permitted within the boundaries of the city and county of San Francisco and that the bodies temporarily interred are to be removed later to the cemeteries at San Mateo.

Sanitary Instructions.

The Health Commission has directed that the following instructions be posted in the following various districts:

FOOD AND WATER CONSUMPTION.

1. All water should be boiled, whether for drinking, bathing or cleansing purposes.
Use no unboiled water in the preparation of food for cooking or baking.
Use unboiled water only for flushing purposes.
This order applies to all water, whether Spring Valley, lake or well water.
2. All milk should be boiled, whether used by infants or adults.
3. Food in cans should not be allowed to stand uncovered, lest it become tainted or infected.
4. Do not eat uncooked vegetables.
5. All butcher shops and bakeries should be screened.

SANITATION.

1. Remove all garbage, animal and vegetable refuse from your premises and put into garbage barrels at the curb line of street, and cover the same with chlorid of lime daily.
2. Seal all toilets and other plumbing fixtures in houses where side sewers are broken or disconnected.
3. Screen all windows, doors and other openings, to prevent the entrance of flies, as they are carriers of filth.
4. District sanitary inspectors will report location of latrines to the captain of the district daily, so that the same may be inspected and properly disinfected.

COMMUNICABLE DISEASES.

1. Any person whatsoever having knowledge of the presence of these diseases should report the same to a physician in his neighborhood, as every physician in the city is now a sanitary inspector. And such physician on receipt of this notice should inspect the case, and if verified by him, report the same to the headquarters at the Park Emergency Hospital, Stanyan and Waller streets, or at the temporary headquarters of the board of health, Grove and Laguna streets.
2. A strict observance of these instructions will positively prevent the spread of any of these diseases.
3. For the safety of all, most careful reports of all contagious or infectious diseases should be given to the district inspectors.

Hospital Work.

St. Mary's Hospital, Hays and Stanyan Streets, has been reopened by eight Sisters of Mercy and thirty assistants, who went from Oakland to re-establish the institution. Work has commenced on the Central Eastern Hospital at Golden Gate Avenue and Gough Street. The new hospital will be in the shape of a quadrangle and space will be provided for wards to contain thirty beds each. Quarters for nurses, physicians and stewards will also be provided.

THE CALIFORNIA FUND.

The following committee has been appointed to represent the California State Medical Society and the San Francisco County Medical Society in the distribution of funds, etc. As we understand it, the committee consists of those forming the San Francisco Society referred to above, in addition to which others have been added to represent the state society: Thomas W. Huntington, Emmet Rixford (treasurer), Frederick W. Lux, Henry J. Kreutzmann, Lucy M. F. Wanzer, Philip King Brown, Julius Rosenstirn, Herbert C. Moffitt, James W. Ward, Charles E. Jones, Malcolm O. Austin, George H. Evans, George G. Gere, John Galiwey and Frank K. Ainsworth.

All contributions, whether from individual contributors or local or county societies, will be acknowledged in this column. Nearly 500 physicians in San Francisco are in urgent need. Make checks payable to the American Medical Association, marking the check "California Fund." Send to the American Medical Association, 103 Dearborn Avenue, Chicago. Mark envelope in lower left-hand corner, "California Fund."

The following contributions, not acknowledged last week, have been received up to 9 o'clock, Wednesday morning, May 16:

INDIVIDUAL CONTRIBUTIONS.

Bailey, O. L., Ocean Springs, Miss.	$1.50
Bliss, Webster, Deerfield, Mich.	1.00
Cattermole, George H., Boulder, Colo.	5.00
Christie, J. R., Quincy, Ill.	1.00
Clouse, A. W., Geneva, Pa.	1.00
Cowen, H. K., Midway, Kans.	1.00
Eccles, R. M., Blissfield, Mich.	10.00
Evers, J. W., Rollin, Mich.	1.00
Gamble, Jr., C. B., Baltimore	10.00
Garrison, Harriet E., Dixon, Ill.	5.00
Gibbs, M.D., Van Houten, N. M.	2.50
Gilbert, O. M., Boulder, Colo.	5.00
Griffin, John M., Warrensburg, N. Y.	3.00
Hanahan, R. B., Winnsboro, S. C.	2.00
Haverfield, A. R., Minneapolis	2.00
Hyndman, William, Cement City, Mich.	5.00
Jackson, F. H., Houlton, Me.	2.00
Jolley, W. A., Boulder, Colo.	1.00
Jones, F. P., Leesville, La.	5.00
Kirkpatrick, Adrian, Mich.	5.00
Lindsay, Samuel, Winnsboro, S. Car.	2.00
Lyon, D. B., Pawtucket, R. I.	5.00
Martin, Ancil, Phoenix, Ariz.	5.00
Morden, Esle T., Adrian, Mich.	3.00
Morden, M. R., Adrian, Mich.	1.00
Morden, W. S., Adrian, Mich.	3.00
Pixley, C. S., Winnsboro, S. C.	2.00
Powell, W. S., Defiance, Ohio	5.00
Queal, E. B., Boulder, Colo.	2.00
Ross, G. W., Ousted, Mich.	2.00
Russell, J. A., Boulder, Colo.	1.00
Sackett, C. C., Laurel, Neb.	5.00
Schooley, S., Belmont, Ohio	5.00
Sears, H. B., Beaver Dam, Wis.	5.00
Spencer, F. R., Boulder, Colo.	2.00
Strickler, O. C., New Ulm, Minn.	5.00
Summer, B. R., Clinton, Mich.	1.00
Tallman, C. A., Weston, Mich.	2.00
Trovillion, E. B., Boulder, Colo.	2.00
Whitmore, E. A., Leadville, Colo.	5.00

SOCIETY CONTRIBUTIONS.

Bristol South District of Massachusetts Med. Soc.	$100.00
Calloway County (Mo.) Medical Society	20.00
El Paso (Texas) Medical Society	25.00
Forsythe County (N. C.) Medical Society	25.00
Fremont County (Colo.) Medical Society	25.00
Guadalupe County (Texas) Medical Society	5.00
Jackson County (Mich.) Medical Society	20.00
Jackson County (Mo.) Medical Society	200.00
King County (Washington) Medical Society	300.00
Lancet Club, Vincennes, Ind.	12.00
Lewis County (N. Y.) Medical Society	10.00
Physicians' Club, Seattle, Wash.	20.00
Practitioners' Club, Jersey City, N. J.	50.00
Schenectady County (N. Y.) Medical Society	50.00
Smith County (Texas) Medical Society	10.50
St. Louis County (Mo.) Medical Society	20.15
Winnepesaukee Academy of Medicine, Laconia, N. H.	20.15

Nacodoches County (Texas) Medical Association, $29.50:

Adams, E. S.	$2.50	Reagan, J. H.	$5.00
Batham, J. H.	2.50	Stuckey, J. H.	1.00
Lockey, R. P.	2.50	Smith, W. I. M.	5.00
Marrs, M. C.	1.00	Tucker, F. H.	2.50
Nelson, A. A.	5.00	Turner, George H.	2.50

Valley County (Neb.) Medical Association, $10.00:

Bartoo, A. E.	$1.00	Main, A. S.	$1.00
Brink, Chester	1.00	Moore, M. S.	1.00
Holdeman, F. D.	1.00	Newbecky, M. M.	1.00
Kohont, Joseph A.	1.00	Pickett, J. J.	1.00
Lee, Daniel	1.00	Thurston, E. D.	1.00

Total	$1,081.15
Previously acknowledged	$5,735.05
Duplicates, etc., to subtract*	125.00
Net total previously acknowledged	5,610.25
Grand total	$6,691.20

* One subscription of $100 was a misunderstanding, the subscriber intending only $50. One subscription of $50 and one of $25 were acknowledged twice, once as promises and once when the money arrived. Total, $125.00.

GENERAL.

Pension Surgeons to Meet.—The annual convention of the National Association of United States Pension Examining Surgeons will be held at the New American Hotel, Boston, Monday and Tuesday, June 4 and 5, beginning at 10 o'clock Monday morning.

American Gastroenterological Association.—The ninth annual meeting of this body will be held at Boston, June 4 and 5, 1906.

American Society for the Study of Alcohol and Narcotics.—The thirty-sixth annual meeting of this society will be held in the parlors of the Vendome Hotel, Boston, June 5-7, 1906. A single session will be held from 9 to 10:30 a. m. each day. Scientific papers will be read by eminent persons. The medical public is cordially invited. Programs can be had by applications to the secretary, Dr. T. D. Crothers, Hartford, Conn.

The American Proctologic Society.—This organization holds its eighth annual meeting at the Hotel Vendome, Boston, June 5 and 6, 1906. The president's address will be delivered by L. H. Adler. Papers will be presented on "Cancer of the Rectum," by W. M. Beach, G. B. Evans and J. C. Brick; on "X-Ray Diagnosis of Sigmoid Stricture," by H. A. Kelly; on "Constipation," by J. R. Pennington and L. J. Hirschman, and on "Pruritus," by T. C. Hill and T. C. Martin.

Havana Institutes Quarantine Against Southern States.—It is reported that the superior sanitary board on May 7 formally recommended a quarantine against ports of Louisiana, Mississippi, Alabama and Texas. The reason given is that the government of the United States will not intervene in sanitary matters in those states, that last year Havana was not informed of the existence of yellow fever in New Orleans until six weeks after the first case occurred, and that during the present season there will be great danger of infection. No quarantine is suggested against Florida because the health officer of that state is also an officer of the United States Public Health and Marine-Hospital Service.

Less Cholera in the Philippines.—Chief Quarantine Officer Heiser reports the great improvement in the cholera situation has continued, except for an outbreak in the town of Siniloan, Laguna Province, where 140 cases occurred within a period of ten days. Owing to the remoteness of the town, this information did not reach Manila until the outbreak was well established. Prompt measures were at once taken to stamp out the disease, and within three days after the sanitary measures were begun no more cases occurred. The experience in this town, Dr. Heiser states, affords another example of what may be accomplished in the eradication of cholera whenever it is possible to apply modern sanitary principles. In view of the continued improvement it was deemed advisable still further to modify the outgoing interisland quarantine regulations.

CANADA.

College Examinations.—The examinations of the last class which registered at Trinity Medical College before amalgamation is being proceeded with. They number about 40, and, according to the terms of amalgamation, they were to be examined by the examiners appointed by Trinity University.

Practice of Medicine in Ontario.—The attorney-general of Ontario has cited a stated case before the court of appeal with a view to settling and determining the precise meaning of the Ontario medical act, and to fix definitely whether persons who practice medicine without the use of drugs can do so without being properly registered.

Typhoid.—Dr. F. C. Douglas, Montreal, has returned home after having had charge of the epidemic of typhoid fever at Fort William, Ontario. Dr. Douglas had charge of the epidemic from March 8, when the death rate was one person to every 9.1. When he left on April 8 only two or three cases were reported. During February the average daily number reported was 25.

Toronto General Hospital News.—A special committee of the staff of the Toronto General Hospital, which has been busily engaged all winter on the proper conduct of a large general hospital, have formulated plans which, to say the least, are quite radical. In the first place, every one on the present staff is called on to resign his position in the interests of the hospital and of medical education, so that the staff may be reorganized on ideal lines, and every practitioner in Toronto is asked to apply for positions on the new staff. A medical board is recommended consisting of the chiefs and assistants of all departments to be appointed to advise the board of trustees. Each medical service is to consist of 50 patients under the control of a physician-in-chief, who shall be directly responsible to the board. These physicians are to give their entire time to teaching, hospital and consultation work. Assistants are to be appointed who, on account of being required to do much work, are recommended to receive $1,000 per annum. In the outdoor department three are to be appointed, to attend two days a week each. Members of the staff will not be allowed to serve on other general hospitals in the city. An age limit of 60 years will be set, when physicians will be placed on the consulting staff. The house staff will probably be appointed on competitive examinations. At least $10,000, the committee states, should be appropriated annually for the scientific departments of the hospital. The emergency branch of the Toronto General Hospital will shortly be closed.

Personal.—Dr. A. A. McArthur, Winnipeg, has returned home after spending three weeks in Ottawa, Montreal and Toronto. ——Dr. S. Douglas, Park River, N. D., having received a license from the University of Manitoba, will hereafter practice in Winnipeg, Man.——Dr. O. Margolese of Montreal has removed to Winnipeg, where he will practice in future.——Dr. Adam H. Wright, editor of the *Canadian Practitioner*, has sailed for Naples. He will be absent about three months in Europe.—— Dr. Bruce L. Riordan, Grand Trunk surgeon at Toronto, is spending two months traveling through Ireland, England and Scotland.——Dr. J. A. Amyot has been elected president of the Toronto Pathological Society; Dr. W. H. Pepler, vice-president; Dr. E. S. Ryerson, corresponding secretary, and Dr. H. S. Hutchison, recording secretary.——Dr. H. B. Anderson has been elected president of the Toronto Clinical Society; Dr. Herbert A. Bruce, vice-president; Dr. G. Boyd, treasurer; Dr. W. J. McCollum, corresponding secretary, and Dr. George Elliott, recording secretary.——Drs. Beal, Black and Davis, London, Ont., have been appointed house surgeons at Victoria Hospital of that city for one year.

Annual Meeting of the British Medical Association.—Considerable progress has been made with the arrangements for the meeting of the British Medical Association in Toronto, August 21-25. A large attendance is expected not only from this continent, but from the British Isles. Among the noted European physicians who are expected to be present are: Dr. Delezenne, director of the physiologic laboratories of the Pasteur Institute, Paris; Dr. L. Lapicque, Paris; Dr. M. Nicloux, Paris; Prof. Justus Gaule, University of Zurich, and Prof. Max v. Frey, University of Würzburg. There will be thirteen sections, which will meet daily from 9:30 till 1 o'clock. The afternoons and evenings will be devoted to general meetings, public addresses, and various entertainments. Sir James Barr will deliver the address in medicine, his topic being "The Circulation, Viewed from the Peripheral Standpoint." Dr. W. S. A. Griffith will deliver the address in obstetrics, Sir Victor Horsley the address in surgery, and it is possible that a public address will be delivered by Dr. Marie of Paris. It is intended that clinics shall be held each morning at 8:30, when interesting cases will be reviewed by some of the prominent physicians and surgeons in attendance.

Hospital News.—The Toronto General Hospital bill has passed the Ontario legislature, and as soon as the new board of trustees provided for by this measure is appointed it will take under consideration the question of a reorganization of the medical staff. The present board will not deal with that question.——The Epileptic Hospital at Woodstock, Ont., which was only formally opened a few months ago, has been found inadequate for the needs of those seeking admission into its wards. Two additional cottages will be erected at once for the accommodation of 80 more patients. The cost is estimated at $48,600. The institution will then consist of the administration building with the superintendent's residence and four cottages.——The dispensary for women opened in Montreal three or four months ago, and attended by women physicians alone, has treated 390 cases of a medical and gynecologic character during the first three months of its existence.——Carlyle, Sask., will erect a small general hospital.——An association has been formed at Hamilton, Ont., the first to be formed in that province under the new Ontario municipal sanitaria act. A site of 98 acres has been donated as grounds for a consumption sanitarium by a Hamilton citizen and the $50,000 in hand for the purpose of a sanitarium will be expended in building cottages. An outdoor department will probably be established in connection therewith.——The total number of patients treated in the Winnipeg General Hospital during the week ending May 5 was 335—183 men, 109 women and 43 children. Eighty-two patients were treated in the outdoor departments.——A year and a half ago the Toronto ratepayers voted $50,000 for the purposes of a municipal sanitarium. Lately Dr. John Noble, the chairman of the local board of health, has revived the prospect of a municipal hospital for consumptives, but the idea met with such strong opposition that the question was taken to the legislature; but the private bills committee of that body was so overwhelmingly against the proposition that it is likely the money will in the near future be handed over to the National Sanitarium Association, for its free hospital ten miles out of Toronto.

FOREIGN.

The Disturbances Near Vesuvius.—The home for incurables at Torre del Greco was adjudged dangerous on account of the

volcanic disturbances, and the 35 inmates have been transported to the public hospital at Naples. The physicians there are discussing the possible pathologic results of the constant inhalation of the volcanic dust in the air.

Biologic Station in Greenland.—The *Presse Méd.* announces that the Danish government has received a bequest of about $10,000 for the erection of the biologic station in Greenland, mentioned in these columns March 11, 1905, page 809. The government will furnish $800 a year toward its maintenance.

Injury of Physician by Insane Patient.—Dr. Thivet, while making his rounds at the asylum at Clermont, France, was struck by one of the patients who had managed to conceal a piece of a bottle. The assistants who interfered were also seriously wounded. The insane patient had also secreted some pepper which he threw in the faces of the medical officers.

Two Physicians at Lisbon Taken from the Congress to the Hospital.—Two members of the International Medical Congress were stricken during the sessions. Dr. Thierry, from Chili, developed symptoms of typhoid fever and was removed to a private room in the hospital of San José, where his wife was also given a room. Another member, Professor Mascaro, an ophthalmologist, residing in Lisbon, while delivering an address on the education of the blind, was stricken with cerebral hemorrhage and was carried to the same hospital in a serious condition. The section adjourned at once after this distressing incident.

Remedy for Seasickness.—The cable states that Professor Hoffa made a thorough trial of the method of treating seasickness described recently in these columns on page 1299. His experience was eminently favorable. He applied hot linen cloths to his brow, bandaging them on tight, and changing about every minute and a half. After half an hour of this treatment he lay down for an hour, and when he arose he was entirely free from seasickness then and thereafter. His experiment was made on a recent trip to the Canary Islands. The technic is that proposed by Eugene Wolf, the explorer, who states in an article in the *Deutsche med. Wochft.* No. 3, 1906, that he has never known it to fail even under the most unfavorable circumstances.

A Paris Medical Journal in English.—A monthly review of French medicine has been founded at Paris "to represent English and American interests in France and French interests in English-speaking countries." The first number has been received and is a newsy journal of some 32 reading pages, with original articles and reviews of the work of the French medical societies, clinical lectures, etc. They have all appeared elsewhere (in French) and have already been reviewed in these columns. Some historical sketches of the great hospitals of Paris are given and lists of the private medical and surgical nursing homes, spas, etc. A quotation from Byrom Bramwell of Edinburgh expatiates on the profound impression made during a recent visit to Paris "by the wealth of material, the extraordinary number of rare and interesting cases of nervous disease, the exhaustive manner in which those cases are investigated, the success with which many obstinate diseases are being treated and cured, and with the lucidity with which these great masters of neurology (Déjérine and P. Marie), discussed and explained the intricate and difficult problems which many of these cases presented." He refers to Déjérine's "milk-isolation treatment" as having proved the most sucessful method of treating functional nervous affections which he has ever tried. An article by Déjérine on this subject is summarized on page 1482. The new *Paris Medical Journal* is published by Drs. A. A. Warden and Edmund L. Gros, 338 rue St. Honoré, Paris, $3.

Egypt and the Soudan.—In his report to parliament for 1905, Lord Cromer, the governor-general of the Soudan, makes many references to medical and sanitary matters. He states that during the early years of the British occupation the financial embarrassments of the government made it impossible to carry out many much-needed sanitary reforms. More recently, however, the water supply of towns has been taken vigorously in hand, and many are supplied with artesian wells. Alexandria is supplied with filtered water, and it is expected that the water-works at Damietta will be completed during the current year. The campaign against malaria which proved so successful at Ishmailia was extended to Suez with excellent results. The number of malarial patients in the hospitals decreased considerably and inquiries in the town indicated that the disease was much less prevalent than usual. The traveling camps for the treatment of ophthalmia, provided for by the Cassel Fund, have proved so successful that it has been decided to augment their work from the government funds. Alcohol, Lord Cromer, states, does not appear to play much part in Egypt. In the seaports there is a certain amount of drinking among the natives who are constantly in touch with Europeans, but the laboring classes scarcely drink at all. On the other hand, hashish smoking is very prevalent and is credited with being a common cause of insanity. The hashish is said to be smuggled into the country from Greece. Lord Cromer quotes from the report of Dr. Christopherson, of the civil medical department, to show that the Soudan is not a fever-stricken, smallpox-ravaged country, into which the Egyptian diseases—ophthalmia, bilharzia and ankylostoma—are being introduced. Smallpox shows itself occasionally, but if the country can be vaccinated properly there is, he says, little danger of an epidemic.

Burlesque Number of the "Muenchener med. Wochenschrift."—Once a year the mail brings us two copies of our scientific and dignified contemporary in a single wrapper. They are apparently identical in makeup and appearance, but the thinner one is pure burlesque from cover to cover. The satire this year is directed mainly against Bier's artificial hyperemia, serum treatment, new drugs, the mania for congresses of all kinds, and the various phases of contract practice. One advertisement purports to be from a sickness insurance company which states that as three of its six contract physicians have just died of starvation and the others have resigned, it is now advertising for 100 new medical officers. Preference will be given to applicants with a congenital faculty for breaking strikes and those who do not yet know anything about the *Leipziger Verband.* The advertisement of a newly founded medical journal follows. Its specialty is to be the discussion of new drugs after they have been tried on 6 animals (2 dogs 1 mouse, 1 guinea-pig and 2 sick-benefit policy holders). A new "Atlas of Mishaps at Operations" is advertised to appear in 80 parts. Part 1 is to be devoted to asphyxia and vomiting under the anesthetic; part 2 to the upsetting of the instrument table; part 3 to sudden detaching of the rubber tube from the full irrigator; 4, to the sudden going out of the lights. The atlas will be completed by the year 1986. One of the sketches is entitled "A New Hypnoticum" and describes the writer's failure to relieve the insomnia of a wealthy patient who was suffering from the results of overexertion in doing nothing (millionaritis hypertrophica). He ordered each of the familiar hypnotics in turn without result, but finally put his patient to sleep by reading aloud a play he had composed. The repeated success of this play as a hypnotic has encouraged him to have it published, and under the name "Dramatol, a New Hypnotic," it is for sale in all the book and drug stores. Among the triumphs of Bier's suction hyperemia reported is the removal of a tapeworm by this means, treatment of impotence, etc. One correspondent puts in a plea for priority, as he commenced years ago to apply the technic of suction hyperemia on his own person for therapeutic purposes, putting his finger in his mouth and sucking it whenever he hurt it. Wassermann reports in the *Grenzgebiete der Utopie und Ironie* the successful cultivation at last of spirochetes in pure cultures. This he accomplished by implanting a Petri dish in the back of a female monkey; he then implanted on the dish a papule on a pedunculated flap from another monkey, immobilizing both animals in a plaster cast. One article advocates removal of hemorrhoids by the abdominal route. Letters from Berlin, Paris and India state among other news that most of the trees in Java are now smeared with mercury, which answers the purpose of inunctions as the inoculated monkeys climb about them. It is stated that the "vaginologist, Prof. Duerr sen.", exhibited an iron woman at the meeting of his local medical society, remarking that the possibilities for rapid and complete sterilization must be regarded as a tendency which might serve as a model. The report of the International Medical Congress at Lisbon contains the alleged opening address of Senor Don Miguel Bombardos Garcia de los Rosinantos y Cravalhyaderos. It opens with the statement: "Of all the countries in the world called to do homage to science and to be celebrated by science none surpasses our radiant Portugal. We were the first to colonize South America and India; it was from our possessions in Brazil that quinin first came to save millions of lives. We invite the world to our colonies to study yellow fever and blackwater fever. We are the land of discoverers and the land of health." Then followed the main addresses, the principal being by his excellency Pampelunos de la Concepcion y Paradoxos, who spoke exhaustively in Portuguese on the "Respiratory Quotient of an Asthmatic Dancing Mouse under Radium Stimulation of the Right Vagus Center." Other pages are devoted to society reports, parodies, poems, etc., many of them extremely bright. The comic number was first distributed at the banquet closing the proceedings of the Twenty-third German Congress of Internal Medicine, which was held this year at Munich, April 23 to 26.

Pharmacology

The Debt of the Medical Profession to the Manufacturing Chemist.

It is a natural tendency to attack an evil rather than to commend a virtue. There is so much that demands reform in the matter of proprietary medicines that a discussion of them tends to leave the impression that the medical profession is hostile to makers of medicinal preparations. This hostility is certainly justified, in so far as it applies to manufacturers who vaunt the claims of adulterated, dangerous, or worthless foods and drugs, or as it applies to those who would make physicians distributing agents for secret or semi-secret mixtures, or for ordinary drugs and chemicals, sold at an exorbitant price under a fanciful name, and on extravagant therapeutic claims.

There may be a few, possibly, who would dispense with all medicinal preparations not contained in the pharmacopeia, and to a certain extent they are justified, for we must admit that the pharmacopeia represents in an official and formal way the consensus of opinion of the medical profession. And any preparation which has not received this sanction should be used only after it has been carefully looked into by those competent to do so. The pharmacopeia, however, must always follow the vanguard of medical progress, and one of the most potent forces in this vanguard is the manufacturing pharmacist or chemist, especially in the past, when the medical profession was not so well organized and when facilities for experimentation were not so well provided as at present. The practical value of what is known as elegance in the preparation of drugs can not be doubted. Elixirs, pills, tablets, capsules, certain ointments, suppositories, bougies, etc., in which the even distribution of active drugs is of great importance, can not always be so well prepared in small quantities, at retail pharmacies, as in large quantities by manufacturers who can command special apparatus and skilled workmen. Even in regard to official drugs whose collection, recognition and preparation is theoretically within the ability of any one well-trained in pharmacognosy and practical pharmacy, we are greatly indebted to manufacturing pharmacists. Especially is this true concerning drugs not native to our own locality. The assaying of galenicals and the extraction of active principles have reached a basis of practical application only through the enterprise of such firms.

There exists much charlatanry in regard to some of the synthetic chemical compounds, and many of these have proved useless or even harmful, still there are not a few of great value, and for these we are indebted to commercial enterprise.

Instances are by no means unknown in which honorable manufacturers have employed skilled assistants, provided costly apparatus, and have gone to great expense in developing and testing new therapeutic agents and then have failed to place them on the market or have withdrawn them after a brief trial, because they did not prove of value. In so doing, they have, of course, had an eye to the ultimate benefit of their reputation and of the value of demonstrated excellence, still such far-sightedness is rare enough in the business world to merit our gratitude.

Therefore, it is unfortunate that there should have developed any antagonism between the medical and the pharmaceutical professions, yet an antagonism has developed, although not to the extent some seem to think. This antagonism is not toward the legitimate manufacturing pharmaceutical firms that are honestly catering to the needs of the physician by furnishing him with non-secret combinations in a convenient and satisfactory form, but against those who are supplying him with preparations about which there is more or less mystery, and for which extravagant, and often false claims, are made. For the practitioner in the country, the wholesale pharmacist has provided means of convenient, elegant, and efficient medication, whose value is inestimable, and the fact that too slavish reliance on such means has occasionally occurred, by no means detracts from the merits of the case.

Opium Habit in Infant from Kopp's Baby's Friend.

We have to record another case of poisoning from the use of Kopp's Baby's Friend. How many such cases occur annually it is, of course, impossible to state, but undoubtedly there are many children who are ruined for life, morally and physically, by the continued use of "patent medicines" containing opiates.

This patient is the infant daughter of Mr. and Mrs. Edwin Jordan, 1204 West Monroe Street, Chicago. Ten months ago, when the child's mother was visiting her old home in Rebersburg, Pa., the child suffered from colic and the mother was advised by her former pastor, the Rev. Mr. Bixler, a Lutheran minister of that place, to try Kopp's Baby's Friend which, he stated, was perfectly harmless and had been used in his family. Dr. J. J. Deshler, Glidden, Iowa, a relative of the family, recently visited Mr. and Mrs. Jordan and at once noticed that the child was in an abnormal condition. He reports the case as follows:

"The medicine was used continuously, according to the instructions on the label, since the child was about 4 months old, once or twice daily, the last dosage being one teaspoonful. The child was under the influence of the opiate the whole twenty-four hours. Dentition is almost completely absent and a general condition of lassitude and listlessness is present.

Appetite has been fair, so that the child is in a well-nourished condition. Its age now is 14 months. The child has an extremely waxy pallor and appears sleepy. While taking the preparation the child 'did not seem to be able to open its eyes wide' (see illustration). It can now do this. It was formerly constipated, then lately a severe diarrhea set in, but that ceased when the drug was discontinued.

"I prescribed two minims each of tincture of asafetida and tincture of hyoscyamus in a little sweetened water.

"When necessary an occasional dose of a carminative tablet containing a minute dose of codein sulphate was given. The parents were instructed to give plenty of nourishment and Pasteurized milk was prescribed.

"Since the child has been taking this the mother states that it is much better and brighter, and takes more interest in its surroundings, though, naturally, it is cross and irritable."

We sent a physician to see the child and to learn present conditions. They are as reported by Dr. Deshler. Mrs. Jordan expressed her willingness to have the report published in the hope that it may be the means of saving other babies from a similar fate. She declared that had she known the preparation contained morphin she would never have used it, and she was very emphatic in stating that: "the government should prohibit the sale of such dangerous preparations."

Canned Editorials.

Under the above apt title, May 12, *Collier's Weekly* says: Canned editorials, to employ the *Druggist's Circular's* apt phrase, are being sent broadcast to the newspaper offices by the Proprietary Association of America. The medical profession is accused of being a huge trust, warring on "patent medicines" in its own interests. Since doctors give enslaving and dangerous poisons, argues the Proprietary Press Bureau, nostrum makers should be allowed to. Verily, a remarkable plea for immunity, this! "It's true that I'm in a murderous business, but so is Dr. Blank across the street." Another stock argument is that doctors' prescriptions are secret, therefore "patent medicines" should be; further, that all prescriptions should be written in English instead of Latin, if "patent medicine" formulas are to be open. But physicians' prescriptions are not secret. If they were the druggist could not fill them. Moreover, they are always kept on file for reference in case of error or damage. As for the substitution of English for Latin, the Fraud Association advocates this because it knows it to be impossible. Latin is the language of science; prescriptions are scientific compounds. Many Pharmacopeia drugs have no English names: infinite confusion and danger would be the result of substituting an unscientific for an exact terminology. As well require all botanic or entomologic classifications to be couched in the language of the country. *Collier's* is charged with being an ally of the "doctor's trust," and its charges are discredited on the ground that they are the work of "hired scribblers." To the honor of daily journalism, be it said that the prepared editorial arguments of the Proprietary Association have either been totally disregarded by the more important newspapers or received with derision.

Subordination of Medical Journals to Proprietary Interests.

One of the articles on fraud in "patent medicines" in *Collier's Weekly* was on "The Patent Medicine Conspiracy Against the Freedom of the Press." What is needed now is an article on "The Proprietary Medicine Conspiracy Against the Freedom of Medical Journals." There is certainly plenty of material at hand to prove that a majority of medical journals are as much under the domination of the proprietary medicine manufacturers as are most of the newspapers under the control of the "patent-medicine" men.

The *National Druggist* of St. Louis is recognized as a supporter of the "patent-medicine" men's association, and it has tried to live up to its full functions as such. It has defended "patent medicines" in particular and nostrums in general. It has attacked everything and everybody that favored legislation looking to the regulation of the traffic and to the protection of the public. A little while ago it published an article entitled "The Legislative Schemes of the American Medical Association," which, as might be imagined by the title, was an attack on the American Medical Association. In the main it was made up of falsehoods, extravagant statements and garbled extracts. It claimed that the attack on "patent medicines" was instigated by the American Medical Association, and that the American Medical Association was the cause of the introduction of bills in the various legislatures for the regulation of "patent medicines." It attempted to show that the doctors, for selfish reasons of course, were back of the movement against "patents" and that the American Medical Association was a trust of the vilest sort, without a redeeming feature.

Immediately after its appearance in the drug journal the article was reproduced in pamphlet form and evidently no money was spared to make it attractive, for as gotten out it was certainly a credit to the printer's art. It was sent to the newspapers of the country and was evidently well circulated among the druggists. Attached to the pamphlet sent to the newspapers was a slip calling the editors' attention to the contents and indirectly suggesting that they make use of them in their columns. While many newspapers recognized that the pamphlet emanated from their patrons, the Proprietary Association of America, and printed extracts from it with their approval, it must be said to their credit that the majority saw the animus behind it and ignored it, and still others showed the absurdity of the statements the pamphlet contained and defended the medical profession. So taking it all in all, the "patent-medicine" men did not see the results they expected to see in their appeal to the newspapers, and the American Medical Association has not been injured as they hoped it would be.

Bearing in mind the fact that this article was in reality a defense of "patent medicines" and an attack on the medical profession, it is pitiful to know that an editor of a medical journal—medical in name, at least—swallowed the bait, hook and tackle, to use a slang expression—and reproduced the entire article, something which no newspaper had done, so far as we know. Just why a medical journal would copy this tirade against those it was supposed to represent might at first seem difficult to imagine. Those charitably disposed might think it was because the editor did not know any better. And yet the reason is evident. The journal to which we refer—the *St. Louis Medical and Surgical Journal*—is a representative of the class of papers that, while published ostensibly for physicians, are kept alive by and conducted in the interests of the advertisers, and whenever it becomes necessary to take sides the advertisers' interests rather than those of the reader are protected. The advertisers in this case are nostrum vendors—at least a large majority of them are—and because the American Medical Association is trying to get rid of the nostrum evil, and because the Association's success will mean for the St. Louis publication the loss of that on which it depends for existence, it naturally wants to see the American Medical Association checked. The *St. Louis Medical and Surgical Journal* did not publish this tirade against the American Medical Association and the physicians of the country because it is in favor of "patents," but because it is under obligations to the nostrum manufacturers whose interests are being affected by the American Medical Association, and because it is one of the organs of the nostrum men, at least this might be expected from the character of its reading matter. An examination of its pages for the last year—the first three months of this year averaging about the same—reveals the following: Aside from the articles it copied from the *Proceedings of the Philadelphia County Medical Society*, none of which could be called original, as they had appeared at least in the publication of the society if not in other journals, the *St. Louis Medical and Surgical Journal* published seventeen original papers during 1905, and of these seventeen, thirteen were "write-ups" of proprietary medicines.

The total of the strictly original articles not devoted to proprietary remedies, exclusive of illustrations, occupied less than six pages.

But besides these "write ups" in the "original" department, there were reading notices, most of them attractively presented to catch the innocent and gullible reader, varying in length from three or four lines to three pages.

The proprietaries written up in this manner and the number of times mentioned are: Acetozone, 2; adrenalin, 1; aletris cordial, 3; antikamnia, 2; antiphlogistine, 8; bovinine, 5; bromotone, 1; bromidia, 1; Burnham's soluble iodin, 1; cactina pillets, 1; campho phenique, 5; celerina, 3; chionia, 1; dermapurine, 8; echthol, 2; ergoapiol, 4; gelineau dragees, 1; Hagee's cordial of cod-liver oil compound, 4; hydrozone, 2; iodalia, 1; listerine, 3; mandragorine tablets, 1; neurilla, 1; Pantauberge's solution, 2; papine, 1; pasavena, 1; passiflora, 3; Peacock's bromids, 1; pinus canadensis, 5; respiton, 1; sanmetto, 15; seng, 2; tongaline, 7; vin Mariani, 13.

An apology is due our readers for devoting space to so unimportant a subject, but while the circulation of the periodical in question may be small and its influence insignificant, it is typical of a class of journals which, combined, has considerable weight with practitioners who are not sufficiently interested in scientific medicine to subscribe for journals edited and published solely in the interests of the medical profession. Although our rule is to ignore attacks made on the American Medical Association and its journal, yet we think it wise, occasionally, to call attention to facts which may enable our readers to discriminate between the true and the false in a matter which is of supreme interest to the profession as a whole.

Society Takes Action.

At a recent meeting of the Ottawa County (Mich.) Medical Society the following resolutions were adopted:

WHEREAS, The American Medical Association, through its Council on Pharmacy and Chemistry, is engaged in the work of bringing to the attention of the medical profession the composition of the various nostrums and proprietary medicines which are on the market and advertised extravagantly and fraudulently to the profession; and

WHEREAS, The interests concerned in the manufacture and sale of these nostrums are spreading literature throughout the country, and are doing everything in their power to defeat the work of the Council on Pharmacy and Chemistry; and

WHEREAS, The American Medical Association, through the editors of the "Councilor's Bulletin" has asked for an expression of the attitude of the different county societies, the component parts of the American Medical Association; therefore, be it

Resolved, That the Ottawa County Medical Society of the State of Michigan hereby expresses its approval of the work that has already been done in this regard and agrees to help in every local way possible this educational campaign; and further,

Resolved, That the members of this society shall refrain from prescribing any of the nostrums which have been analyzed and rejected by the Council and that they shall seek to profit by the articles published in THE JOURNAL of the American Medical Association under the head of "The Pharmacopeia and the Physician"; and further

Resolved, That the society extends its thanks and earnest commendations to *Collier's Weekly* and the *Ladies' Home Journal* in their campaign against "The Great American Fraud" and promises its support in their further work in this direction; and further

Resolved, That copies of these resolutions be sent to THE JOURNAL of the American Medical Association, the *Journal of the Michigan State Medical Society*, *Collier's Weekly* and the *Ladies' Home Journal*.

B. B. GODFREY, M.D., and E. D. KREMERS, M.D., Committee.

Insurance Examination Fees

Cheap Fees and Cheap Services.

PORT RICHMOND, S. I., May 7, 1906.

To the Editor:—I was very much interested in Dr. McCormack's article, and I believe it and similar articles will have a tendency to strengthen the fraternal feeling among "doctors."

The argument that the majority of physicians are willing to make examination for $3 is a weak one, for, if insurance companies should reduce the fees to $2 or $1.30, there would still be a good many men who would work for them, for reasons which are obvious to struggling physicians. Not only was there a cut in wages, but there was also an increased amount of work required. One large industrial company now requires urinary analysis of all applicants, when, as formerly, the age limit was 45 years.

It also has an intermediate form whereby an agent can write several thousand dollars' worth of insurance and yet the physician receives only $1 for examination and often is asked to review his work or answer inquiries without extra compensation.

In the industrial department the instruction book is so worded that they can use the "big stick" on any examiner at a moment's notice and the examiner has no redress.

If any one doubts this I refer them to the instruction book, where it states: "An examiner must make a personal, physical examination and all questions must be answered before applicant signs." The fee for this is 25 cents. How many examiners are there that are not technically guilty and liable to have their reputations smirched whenever the "big stick" falls? Who are the users of the "big stick?" They are members of our own profession, members of our society, state and interstate, and often graduates from the same alma mater.

One of the things that the medical profession needs is more men who are independent and unselfish and who will fight for principle and right regardless of any temporary pecuniary loss.

N. D. CHAPMAN, M.D.

Society Takes Action on Fees.

BUFFALO CENTER, IOWA, May 11, 1906.

To the Editor:—I was instructed by the Winnebago County (Iowa) Medical Society to send to you for publication a memorandum of action at a meeting held at Lake Mills, Iowa, May 10, 1906: It was moved and seconded that a resolution be adopted not to accept the 40 per cent. reduction in life-insurance examinations asked for by certain old-line insurance companies, and that the society sanction any action taken by the state and other county societies in regard to the regulation of fees in fraternal insurance examinations, and that our delegate to the state society be instructed to use all honorable means to co-operate in any movement tending to put the fees for such fraternal examinations at two or more dollars. Carried.

H. F. THOMPSON, Secretary.

Medical Organization and Insurance Fees.

GALESBURG, ILL., May 12, 1906.

To the Editor:—The letter from Dr. McCormack in reference to life-insurance fees in THE JOURNAL, May 5, together with your editorial on the subject in the same issue, although perhaps a little late in the day, must come as a welcome help to the many practitioners who are in doubt not only as to their duty, but as to their rights in this important matter.

It does not seem that it was eleven years ago, as stated by Dr. McCormack, that the New York Life Insurance Company notified me that after a certain date the fee for examining applicants for their company would be reduced to $3. However, they were promptly notified to remove my name from their list of examiners. My idea was that I could not consistently examine for the Mutual Life, the Equitable and the Northwestern, including many others who had not reduced their examination fee, and continue with the New York Life at $3. For the same reason I refused to examine for the so-called assessment companies whose examination blanks usually required more work for a dollar than any one to the many practitioners who are in doubt not only as to their

Is it not reasonable to suppose that one of the explanations of the failure of the many assessment companies to survive any long period is the size of the medical examination fee? A dollar never has bought as much as five dollars and it never will. To illustrate: I knew, professionally, a diabetic who got insurance in every assessment company to which he applied. He furnished his own urine to every one of the examiners, but none of them had time to examine it in addition to all the work necessary to fill out the required blank. This man, although he tried, did not succeed in getting into any old-line company. Many of the examinations for the assessment companies are made in bunches; often nothing but filling out the blanks in a perfunctory manner in the physician's office is attempted, no measurements or physical examination. The head physician of one of these orders recently complained to me that a certain examiner of theirs never turned in an examination blank with the pulse other than 72, respirations 17 and temperature normal. Twenty years ago, when I was a first-year medical student, I remember assisting my preceptor one evening in examining an office full of men. My part of the duties was to make the physical examination, while he sat behind the desk and did the clerical work necessary. Comment is needless, except that the doctor in question was being paid a small fee for each examination, and he was too busy to take the time from work that paid him better.

The point in your editorial relative to the low fees of these companies is well taken, and if they can not be made to modify their examination blank to within reasonable limits for a minimum fee of from two to three dollars, then they should be refused the service. This can easily be done with the present organization of the county societies. The trouble with the assessment companies is that many of them are started by a lot of grafters who do not want an honest medical examination or a permanent institution. This must be true, else the promoters of these concerns would not attempt to sell insurance for the price they ask. They can not be honest, I repeat, else they would not expect to get for a mere pittance an examination which would make them safe in accepting a given risk. Of course, in the final analysis, the doctor is to blame for conditions as they exist, and back of him is the great fact that he has had no organization by which he could systematize and dignify his claims to square treatment.

Some weeks ago I received a letter, with a postal card inclosed, notifying me that the fees had been reduced by the Mutual Life Insurance Company of New York from $5 to $3, and requesting that I use the postal to notify the company of my acceptance of their proposition. As I remember it, this postal was an interesting document: it was printed in

such a way as to assume that only one reply would be received from the recipient. I crossed out the ready-made answer, or its equivalent, and merely stated that they could remove my name from their list of examiners. The reply which I received was identical with that received by Dr. Parsons of Brookings, S. Dak., published in THE JOURNAL, May 12, 1906.

To this I replied in part as follows:

Brandreth Symonds, M.D.,
Medical Director Mutual Life Insurance Company,
New York, N. Y.

Dear Doctor:—Relative to yours of the 9th inst., in reference to my retaining the position as one of the examiners of the Mutual Life at this place, permit me respectfully to decline the position at anything but the old terms.

A life insurance company that has to economize in its medical department is in an unenviable position. The corner-stone of life insurance must be the honesty of its medical examiners, to say nothing of their technical knowledge. To let down in your fee to the amount proposed will, in a large number of instances, make these men, to that proportionate degree, careless in their examination. You will simply get a three-dollar examination in spite of the fact that many of the examiners will try to give you a five-dollar service. On these grounds, I refused to examine for the New York Life a few years ago, and I would not be consistent if I did not do the same with your company now. In passing, and while on this point, it may be well to mention that the New York Life got a very good practitioner to take my place. This man was also examiner for your company at the time he accepted the three-dollar position from the New York Life. In other words, he was willing to take three dollars from the latter company for supposedly the same kind of an examination for which he was charging your company five dollars. But for some unknown reason your Chicago office, some months ago, dismissed him from his position; on what grounds, I do not know. It will not be surprising if a riper experience on the part of your company will show that the twelve thousand who consider your "new fee schedule as adequate" will show in the future characteristics which will make it desirable to dismiss them also. At any rate, I consider myself fortunate in being able to be numbered with the "nine hundred."

An interesting reference in your letter is the one as to the necessity for rigid economy because of recent events in the life insurance business. The "other companies" (I presume you refer to the New York Life) which have had this reduced "fee schedule in force for years" do not seem to have benefited their policy-holders any by reducing their examination fee to three dollars. The New York Life, with its three-dollar economy examination fee, was proved to be even more rotten at the three-dollar fee than the Mutual Life, which, up to now, has maintained the five-dollar fee for an examination.

It is an interesting question as to how far the big insurance companies can afford to go in this kind of treatment of their most necessary allies, the physicians of this country. The future alone will decide; but I do not care to be made a part of the experiment.

With the greetings of a colleague, believe me,

Very sincerely yours,
J. F. PERCY.

I believe that the position taken in the above letter is correct, and believe it now more firmly than ever since reading your editorial and the letter of Dr. McCormack above referred to. My only regret is that more of the "twelve thousand" did not take the same view of the question. Some time ago I received notice of my appointment as examiner in one of the old-line eastern companies. The letter containing my appointment, among other things, had this to say:

"We can not refrain from calling your attention to the very responsible character of your duties as medical examiner to this company. It is not too much to say that the safety of an insurance company rests largely in the hands of its medical examiners. If unhealthy risks are taken, it will prove of little avail that the other departments of the company are conducted in an efficient and careful manner."

Another important phase of this subject is the one of the physician as a policy holder in the companies under consideration, because an appointment is usually predicated on the fact of the physician who is willing to become an examiner first taking out a policy. We have heard for years that life insurance offered the best form of investment for the professional man. With thousands of other unfortunates, who are not physicians, we now know that the investment feature was a delusion and a snare, concocted by wileful agents with the connivance of the home officers of these great companies. What is to be the attitude of the "twelve thousand" in the future as these same agents lead into their offices for examination, as sheep to the slaughter, seekers after life insurance whom they (the examiners as well as the agents) will know from now on are being buncoed when the examination is for anything but straight life insurance? Will the medical examiner become a party, with the average agent, to the fraud when the applicant has not been told the whole truth as to what he is buying in the way of life insurance? This most cruel form of deception was the rule with all but a very few of the life-insurance agents who required our services in the past. But now we physicians know, or ought to know, something of the relative value of the various forms of insurance. Will it become part of the duties of those medical examiners who are to make medical examinations for $3 to tell the applicant what he may not have been told by the agent? For the honor of the profession, I trust that the physicians who may continue to hold these positions at the reduced price will not now continue knowingly to aid any agent in deceiving those who apply for life insurance.

J. F. PERCY.

Correspondence

Automania the New Disease.

COLUMBUS, OHIO, April 25, 1906.

To the Editor:—The number of diseases produced by occupation is being augmented by the complexity of modern life. Medical men are acquainted with the ordinary forms of occupation diseases, such as the necrosis of match-makers, the cataract of blacksmiths, the colic of painters and the like.

I wish to call attention to a disease of this class of recent origin. The new disease is so prevalent as to have attracted the attention of many physicians, and I learned from THE JOURNAL, April 21, that not a few physicians have had a personal experience. The new disease is a functional neurosis and spreads through a community, like chorea, by imitation.

The disease is known as motor fever, chauffeur mania and automobiliousness. The spread of the disease is limited only by the confines of civilization and the quarantine enforced by poverty. The disease has followed the train of the horseless carriage into every country able to pay the excise and repair duties.

In the etiology of chauffeur mania, the automobile is the direct cause, and the sporty disposition, plus a large bank account, constitute the predisposing causes. The disease affects a large class of people. It is, indeed, pandemic. The extremes of life are exempt. The male sex furnishes the vast majority of the subjects. Physicians are peculiarly susceptible. The poor are immune. The rich are especially predisposed. The negro is rarely affected, except through reflex relation to employer.

There is little known of the pathology of the disease, as it never proves fatal. Neurologists regard the disease as a neurosis. On the other hand, chemists who have reported delusional insanity, as terminal forms of motor fever, do not regard the disease as a simple neurosis. Although they declare that the pathognomonic symptom, in support of the doctrine of insanity, in all terminal cases of this disease, as observed in hospital practice, is found in the fact that on entering the ward not a patient is visible—all are hidden under the beds working with the springs!

Almost all cases of motor fever are chronic. They seldom last less than one year, and often from two to five years. The most promising cases are those with equine reserves. One pegasus in the end will outrival three "honk, honk wagons."

Coming closer to the clinical history, one of the first symptoms to develop is amnesia. The failure of memory refers especially to routine duty. This neglect of duty often extends to domestic and personal wants. Irregularity of habits follows. The mental attitude is shown in eccentricity of costume. The peculiarities of facial expression are known as "the stony visage" or "the sphinx-face."

The features of the automobile face are drawn, rigid and ruddy, as in paralysis agitans. The eyes wear a steady gaze, and a far-distant focus, attended with a cold glitter. The stony visage often appears in a sort of trance, as though the patient were the subject of autosuggestion rather than automobiliousness. The stony, ruddy visage, with its far-off fixed gaze, prematurely old, dust-laden, garnished with goggles and a "you-be-damned" expression is pathognomonic. This *tout ensemble* once observed is never forgotten.

In cases of long standing, mental excitement is a constant symptom. Sleep is dominated by dreams of speed, cylinders, cooling devices and expenses. The patient becomes arrogant and impervious, impatient and petulant. He is intolerant of everything and everybody, especially police officers.

The diagnosis is not difficult, but the disease has been mistaken for delirium tremens. In chauffeur mania, the patient sees the animals and is positive he sees them.

In *mania a potu*, the patient is uncertain as to the real existence of obtruding animals and his ability to destroy them. Not so the chauffeur maniac, as he is swift and certain of both aim and game.

Chauffeur mania has been confused with football psychosis. In the latter disease the subjects are perfectly harmless concerning the public or domestic animals, but attack and destroy each other. The automaniacs never attack each other, but have predilection for small animals, as chickens, dogs, cats, toads and sometimes babies.

In advanced cases, a kind of strabismus or obliquity of vision has been noted, in which the driver of the machine loses control and the line of transit is direct to a telegraph pole or the goal may be a road-house.

Treatment is unsatisfactory; the most effectual is prophylactic. Army and Navy service should result in prevention. Permanent residence in the mountains is recommended.

Goat lymph was tried as a curative agent in a series of cases. The treatment was discontinued for the reason that patients were butting into lakes, plate-glass store fronts and police stations. J. W. CLEMMER.

Invitation to Mexican Congress.

THE INTERNATIONAL MEDICAL ASSOCIATION OF MEXICO.

TORREON, COAH., MEX., May 11, 1906.

To the Secretary of the American Medical Association: On behalf of the members we have the honor to invite the members of the American Medical Association to be present at the second annual meeting of the International Medical Association of Mexico, which will take place in Mexico City in November next. Due notice of the exact date will be given.

Hoping to have the pleasure of the company of many, if not all, members of the A. M. A., we have the honor to be, yours very truly, W. R. JAMIESON, Sec'y and Treas.

R. D. ROBINSON, President.

Shock as a Curative Agent.

CHICAGO, May 12, 1906.

To the Editor: The editorial on "Shock as a Curative Agent" in THE JOURNAL, May 12, p. 1444, recalls to me a rather interesting and, I believe, unusual experience. Some years ago I was a passenger on a transatlantic liner which met with a mishap, so serious in character, that for nearly two days we expected to go down at any moment. On the evening preceding the accident only 12 of the 250 cabin passengers were down to dinner, one being detained by a recent attack of apoplexy, 237 by seasickness, more or less severe. On the following morning 249 of us assembled in the dining room and ate our breakfast with as much relish as our mental state permitted. The only absentee was the paralytic. The reverse side of the picture was represented by four cases of acute insanity and an acute exacerbation terminating in suicide in a chronic case of mental derangement. SYDNEY KUH, M.D.

Association News

SCIENTIFIC EXHIBIT.

Committee.—FRANK B. WYNN, Indianapolis, Director; W. M. LATE COPLIN, Philadelphia; W. T. COUNCILMAN, Boston; FREDERIC S. DENNIS, New York; JAMES CARROLL, Washington, D. C.

MEETING PLACE, NEW HARVARD MEDICAL SCHOOL BUILDINGS, LONGWOOD AVENUE.

The Scientific Exhibit at Boston will consist of specimens, models, diagrams, apparatus, etc. A laboratory in operation will show newer laboratory methods as applied to diagnosis and to investigation. Demonstrations will be given on special subjects in small rooms; others of more general interest will be conducted in a large amphitheater where a lantern and projection microscope are available. The program of demonstrations follows:

A. ILLUSTRATED LECTURES AND LANTERN SLIDE DEMONSTRATIONS IN THE AMPHITHEATER OF THE ANATOMICAL BUILDING.

WEDNESDAY, JUNE 6—10 to 12 A. M.

HEKTOEN and RUEDIGER: Demonstration of (a) phagocytosis experiments and (b) cultural peculiarities of pneumococci and streptococci.

HODGE: "Locomotion of Amebæ."

CARROLL: Demonstration of *Amœba coli* and life history of Amebæ.

TYRODE: Demonstration in pharmacology.

WEDNESDAY, JUNE 6—2 to 5 P. M.

FITZGERALD: "Biologic Studies Connected with Water Work Construction."

WOLBACH: "Blastomycotic and Allied Skin Affections."

PARK and WILLIAMS: "Rabies."

WRIGHT: "Actinomycosis and Madura Foot."

FROTHINGHAM: "Rabies: Glanders."

THURSDAY, JUNE 7—10 to 12 A. M.

GAGE: Demonstration of (a) projection microscope and its application in teaching; (b) projection of frog's circulation.

PORTER: Demonstration of (a) physiologic apparatus; (b) nutrition of heart by vessels of Thebesius; (c) circulation in a tortoise heart.

CANNON: Kinetoscope demonstration of (a) movements of intestine and stomach; (b) demonstration of action of valves in ox's heart by electric light.

BOWDITCH: Demonstration of optical illusions.

HENDERSON: Demonstration of heart model showing action of valves in production of heart sounds.

LONGCOPE: Demonstration of muscular bundle of His, with cases illustrating heart block.

HATCHER: Demonstration of kidney perfusion.

THURSDAY, JUNE 7—2 to 5 P. M.

(Joint meeting with the Section of Pathology and Physiology.)

FITZGERALD: "The Metropolitan Water Supply of Boston."

BENEDICT: Illustrated lecture, "Metabolism," with demonstration of respiration calorimeter of Atwater.

NOVY: Demonstration of Trypanosome diseases.

KREMERS and REMINGTON: Demonstration of exhibit showing the development of pharmacopeias.

MARCY: Demonstration of historial exhibit, illustrating the life and work of HENRY I. BOWDITCH.

FRIDAY, JUNE 8—10 to 12 A. M.

MEYER: Illustrated lecture, "Psychiatry and Methods."

SOUTHARD: Demonstration of cerebral tuberculosis and of the Bullard collection.

TAYLOR: Demonstration of the systemic diseases of the spinal cord.

NICHOLS: Demonstration of diseases of joints, tuberculosis and chronic arthritis.

WHITE: Demonstration of advanced tuberculosis in childhood and adult life.

B. MICROSCOPIC AND OTHER SPECIAL DEMONSTRATIONS—THESE WILL BE CONDUCTED IN THE SMALLER ROOMS OF THE NEW HARVARD MEDICAL SCHOOL BUILDINGS AT THE HOURS AND BY THE INDIVIDUALS SCHEDULED BELOW.

TUESDAY, JUNE 6.

9 a. m. to 12 m.—FRAZIER: "Surgical Pathology."

2 p. m. to 3 p. m.—BEEBE: Demonstration of agglutinins, etc. Room A.

CALKINS: Demonstration of paramecia, etc. Room B.

3 p. m. to 4 p. m.—GAGE: Various glycogen reactions.

HODGE: Demonstration of motile amebæ of nerve cells in fatigue. Room B.

MILLER: "Lymphatics of Lung."

WEDNESDAY, JUNE 7.

9 a. m. to 11 a. m.—SCHULTZ: *Spirochæta pallida*. Room A.

KNOWER: "Lymph Hearts and Lymphatic System of Frog Larvæ." Room B.

11 a. m. to 1 p. m.—MANDELBAUM: Various pathologic specimens. Room A.

COPLIN: Various pathologic specimens showing lesions of mucous membranes.

PARK and WILLIAMS: Rabies, etc. Room B.

MALLORY: Intercellular fibrillæ. Room A.

SOUTHARD: Demonstration of Gliomata.

THURSDAY, JUNE 8.

9 a. m. to 11 a. m.—SCHULTZ: *Spirochæta pallida*. Room A.

ROSENAU: "Cestode Parasites." Room B.

11 a. m. to 1 p. m.—TYZZER: Demonstration of mouse tumors, varicella; dermatitis from Brown tails, etc. Room A.

VERHOEFF: "Eye Lesions, Tumors," etc.

WRIGHT: Blood Plates, etc. Room B.

Clinical Exhibits.

Dr. Richard C. Cabot, chairman of the Committee on Clinical Exhibits at the Boston session, announces an elaborate series of demonstrations at all the hospitals. The list is too long to reproduce here, but we quote the general announcement. The full schedule will be given in the Official Program, a copy of which will be given each member on registration. Dr. Cabot says:

To provide a brief postgraduate course in each and all the branches of medicine, a course free to the members of the Association and conducted by the best teachers of the Harvard and Tufts medical schools is the object of this exhibit. If a physician wishes to inform himself on the current methods of examining blood, urine, sputa, feces or gastric contents he can find specimens and demonstrators in Mechanics Hall. If he wishes to watch the detail of operative technic in general surgery or in any special branch, such as orthopedics and gyneocology, he can do so at one or more of the hospitals. If he wishes to compare notes with our best authorities on infant-feeding or on the outdoor treatment of tuberculosis he can avail himself of some of the many demonstrations at the Children's Hospital, the Samaritan Hospital or the Infants' Hospital.

If he wishes to examine and diagnose cases of surgical interest, cases of the contagious exanthema, of gastric, cardiac or pulmonary disease, or neurologic or dermatologic cases, he is welcome to use the clinical material offered for his study in the Boston City Hospital, the Massachusetts General, the Boston Dispensary or the Mechanics Hall exhibit.

Apparatus, instruments, records, models, charts, photographs, lantern slides and *x*-ray plates will be used to supplement the clinical material. Autopsies with the clinical history of each case will be demonstrated, moving pictures of epileptic fits, spasms and gaits of various types will be shown and explained, cases of the various types of mental disease, accompanied by attendants and history, will be ready for study.

All the hospitals will be open for inspection and study throughout the session, and any one who wishes to devote special attention during the session (or after it) to any one of the medical or surgical subjects exhibited will find no difficulty in arranging to do so. To prevent overcrowding at any one clinic or demonstration, a number of tickets proportional to the seating capacity of each amphitheater will be distributed each day from a central booth at Mechanics Hall. First come, first served.

GENERAL ENTERTAINMENTS.

FOR MEMBERS AND GUESTS.

(The official member's badge, or one of those provided for ladies and guests, will be required for admission.)

TUESDAY, JUNE 5.

4-6 p. m.—Afternoon tea at the New Harvard Medical School buildings, on Longwood avenue, by the invitation of the medical profession of New England and the courtesy of the president and fellows of Harvard College. There will be music in the central court, the grounds will be decorated for the occasion and tea and light refreshments will be served by the young ladies of Boston.

8 p. m.—Gen. William H. Devine, surgeon-general of Massachusetts, extends a cordial invitation to the members and guests of the American Medical Association to visit the South Armory, Irvington street, at 8 o'clock on Tuesday evening, June 5, to witness a regular drill of the ambulance company of the Massachusetts Volunteer Militia.

8:30 p. m.—Chickering Hall, Huntington avenue. Mr. Charles Truax, of Chicago, will deliver a lecture on the Yellowstone National Park, superbly illustrated by lantern slides.

9-11 p. m.—Boston Public Library reception. The trustees of the Boston Public Library extend a cordial invitation to the members of the Association to a reception at the library from 9 to 11 p. m. on Tuesday, June 5, to meet his honor, the mayor of Boston.

9-11 p. m.—Boston Museum of Fine Arts. The trustees of the Museum of Fine Arts invite the members of the Association to a reception at the museum at 9 o'clock on Tuesday evening, June 5.

WEDNESDAY, JUNE 6.

4-6 p. m.—Afternoon tea at the New Harvard Medical School buildings.

8:30-12 p. m.—A reception and promenade concert will be given by the medical profession of New England to the president, officers, members and guests of the American Medical Association at Mechanics' Hall. There will be dancing and refreshments. The hall will be decorated and music will be furnished by the Medical Glee Club and by an orchestra of thirty-five pieces.

THURSDAY, JUNE 7.

2:30-3:30 p. m.—Organ recital. The rector of the Mission Church, 1545 Tremont street, has extended an invitation to the members of the Association to visit the church and to inspect the school, club, gymnasium and other institutions which are there conducted by the Redemptorist Fathers. An organ recital will be given from 2:30 to 3:30 p. m.

4-6 p. m.—Afternoon tea at the New Harvard Medical School buildings.

8 p. m.—"Theater night." Arrangements have been made for the reservation and sale to members of the Association and their guests, at a booth in Mechanics Hall, of tickets to all of the theaters and to the "pop" concert at Symphony Hall. Special performances will be arranged and the "pop" concert will be reserved entirely for the members of the Association.

Special invitations to the members of the American Medical Association have been extended by the officers of the following institutions, and arrangements for their reception and entertainment will be provided: Boston Medical Library, Boston Museum of Fine Arts, Boston Public Library, Boston Young Men's Christian Association, Cambridge School of Nursing, Children's Hospital, Faulkner Hospital, Harvard College, Massachusetts General Hospital, Massachusetts Society of Mayflower Descendents, Waltham Training School for Nurses.

EXCURSIONS.

The excursions planned for the members of the Association and the ladies and guests who may accompany them are too numerous to be enumerated here. A special pamphlet giving details of the various excursions will be issued to each member of the Association at the time of registration, together with the Guide Book, which has been prepared expressly for this occasion.

The Association Insignia.

Since the publication in recent issues of letters by Drs. E. Fletcher Ingals, T. S. Dabney and E. S. McKee relating to the official insignia of the American Medical Association, we have received numerous inquiries concerning the button and how it may be obtained. Many of our readers do not seem to be aware that for years we have made an announcement in our advertising pages for the purpose of giving this information. This week's advertisement appears on page 33 in our advertising department. To all inquirers we desire to say that the American Medical Association insignia can be procured at the office of the Association, 103 Dearborn Avenue, Chicago. The price of the button is $1.00, or a member may receive one as a premium for securing a new member of the Association, or a new subscriber to THE JOURNAL, but not for the transfer of a present subscriber to membership. Women who prefer a pin may secure the badge in the form of a cloak pin on the

same terms. The general use of the official insignia can not fail to promote a fraternal feeling among physicians.

Hotels.

The Committee on Hotels announces that all available accommodations in the first-class hotels are filled, but that applications are coming in only slowly for lodging-houses. The committee has a list of lodging-houses of good quality and of accessible location, with ready facilities for dining out.

Attention is again called to the possibility of securing accommodations near the ocean. As announced in THE JOURNAL May 5, if a sufficient number write immediately making the request, it will be possible to have accommodations provided at Winthrop Beach at the time of the session, although ordinarily the hotels there would not be opened until later in the season. Those who would like to take advantage of this privilege should write immediately to Dr. D. D. Scannell, Secretary of the Committee on Hotels, 8 The Fenway, Boston

New Western Railroad Rates.

Dr. John C. Munro, Chairman of the Committee on Transportation, sends the following additional information:

The Western Passenger Association has granted a rate of one fare, plus $1.00, for the round trip from points on the Missouri River, and east thereof; and a rate of one fare, plus $2.00, for the round trip from points west of the Missouri River. Tickets will be sold June 1-4, and also on May 31 from Missouri River points.

The Southeastern Passenger Association has granted the same rates as announced for other territory, one fare, plus $1.00, for the round trip; tickets to be sold beginning May 31. Stop over at New York will be allowed on return ticket as on other lines.

Date of Entering New England Modified.

A slight modification of the going regulations is the following: The Trunk Line Association will issue tickets good on going passage from New York City on the 11 o'clock and midnight trains, June 1, and on Long Island Sound steamers on the evening of June 1. By previous announcement tickets were not to be good to enter New England until June 2.

Marriages

MAURICE B. WOLFF, M.D., Chicago, to Miss May Steiner of St. Louis, May 15.

C. P. BROKAW, M.D., to Miss Mattie E. Wiggins, both of Dalhart, Texas, May 10.

W. OTWA LEE, M.D., Danville, Va., to Miss Ethel Wood, at Pelham, Va., May 9.

PAUL J. BURRELL, M.D., Winslow, Ill., to Miss Leda Smith of Cadiz, Miss., recently.

TONY EDWARD HUNTER, M.D., to Miss Eva May Stewart, both of Versailles, Ind., May 1.

LEWIS A. MOORE, M.D., Tower, Minn., to Miss Catherine Walter of Monroe, Wis., May 1.

THOMAS ST. CLAIR, M.D., Latrobe, Pa., to Miss Emma Howard of Hagerstown, Md., May 2.

HENRY COWLES RUCKER, M.D., Stonega, Va., to Miss Lillian Rucker of Richmond, Va., April 28.

GEORGE EDWARDS TOOLEY, M.D., Washington, Kan., to Miss Ida Erb of Kansas City, Mo., May 9.

EDGAR L. BOONE, M.D., New Martinsville, W. Va., to Miss Marie Ball of Elizabeth, W. Va., May 4.

GEORGE BYRON THOMPSON, M.D., Kansas City, Mo., to Miss Olive Bright of Los Angeles, Cal., May 15.

SAMUEL J. WYLIE, M.D., Columbus, Ga., to Miss Bessie Dudley of Girard, Ala., in Columbus, Ga., May 3.

JOHN B. STEELE, M.D., Chattanooga, Tenn., to Miss Elizabeth N. McAnally, of Huntsville, Ala., May 2.

GEORGE E. THOMPSON, M.D., Green Bay, Wis., to Miss Flora M. Dart of De Pere, Wis., in Menominee, Wis., May 2.

MAXIMILLIAN MONTROSE COOK, M.D., Columbia, Tenn., to Miss Minnie Mai Waddey of Franklin, Tenn., May 3.

WILLIAM EDWARD REED, M.D., Nashua, N. H., to Miss Elizabeth May Hankin of Clinton, Mass., at Saxonville, Mass., May 2.

Deaths

Bleecker Lansing Hovey, M.D. Geneva (N. Y.) Medical College, 1843; surgeon of the One Hundred and Thirty-sixth New York Volunteer Infantry; later surgeon U. S. V., brigade surgeon and division surgeon of the Eleventh Army Corps; medical purveyor and hospital inspector of the Army of the Cumberland and medical director of the Twentieth Army Corps during the Civil War; a member of the American Medical Association; formerly vice-president and president of the New York State Medical Association; formerly president of the Monroe County (N. Y.) Medical Society and honorary member of the Rochester Pathological Society; censor of the Buffalo Medical College for 30 years, and formerly censor of the Syracuse University Medical Department; one of the oldest and most prominent physicians of Rochester, N. Y., died at his home in that city, May 5, after an illness of several months, aged 89.

James Winchell Coleman Ely, M.D. Harvard University Medical School, Boston, 1846, of Providence, R. I., who was tendered a banquet, April 27, in honor of the sixtieth anniversary of his entrance into practice; a member of the staff of Dexter Asylum for 16 years; a member of the Rhode Island Medical Society for 58 years, and its treasurer, secretary and president, and censor at various times; one of the original members, first secretary and once president of the Providence Medical Association; city physician of Providence for 16 years; consulting physician of the Butler Hospital for the Insane; attending and consulting physician of the Rhode Island Hospital for 36 years; a member, secretary and president of the Rhode Island Historical Society, and a member of the American Academy of Medicine, died at his home in Providence, May 6, from pneumonia, after an illness of five days, aged 85.

William H. Crane, M.D. Medical College of Ohio, Cincinnati, 1893; professor of medical chemistry in his alma mater; city chemist and bacteriologist of Cincinnati, and one of the best known of the younger physicians of that city, died suddenly from cerebral hemorrhage, May 7, while speaking before the Cincinnati Academy of Medicine, aged 37. Resolutions setting forth the loss sustained at the death of Dr. Crane were adopted May 8 at a special meeting of the faculty of the university medical department.

William Clarence Egan, M.D. Rush Medical College, Chicago, 1875; a veteran of the Civil War; a member of the Iowa State Medical Society, and some-time physician of Atlantic and of Cass County, died at his home in Atlantic, May 1, from valvular heart disease after a prolonged illness, aged 59. At a meeting of the physicians of Atlantic, May 2, resolutions of respect to the memory of Dr. Egan were unanimously adopted.

Esther H. Hawkes, M.D. New England Female Medical College, Boston, 1857; a nurse and surgeon during the Civil War, and for many years in charge of the work of the Freedman's bureau at Charleston, S. C.; a member of the Gynecological Society of Boston, the New England Hospital Medical Society and the Lynn Medical Fraternity, died at her home in Lynn, Mass., May 6, after a long illness, aged 72.

George W. Porter, M.D. Department of Medicine of the University of Pennsylvania, Philadelphia, 1851; formerly of Harrisburg, Pa.; postmaster of the city in 1867; for 13 years trustee of the State Hospital for the Insane, Harrisburg, and for several years prison inspector and secretary of the board, died May 7, at the home of his daughter in Spring Lake, N. J., aged 81.

John Dudley Meng, M.D. College of Physicians and Surgeons, Keokuk, Iowa, 1877; for four years health officer of Chico, Cal., died at the Florence Nightingale Sanatorium, Chico, April 25, from cerebral hemorrhage, after an illnes of only a few hours, aged 53. At a special meeting of the physicians of Chico, April 26, resolutions of respect and sympathy were adopted.

Arthur Manley Burns, M.D. Bellevue Hospital Medical College, New York City, 1871; formerly of Brooklyn, N. Y., where he was a member of the board of health and health officer for the Greenpoint district and for six years physician of Kings County; later a resident of Alaska, died at his home in San Diego, Cal., April 26, after an illness of twelve weeks, aged 64.

Onan B. Gross, M.D. Department of Medicine of the University of Pennsylvania, Philadelphia, 1878; a member of the Camden City and Camden County (N. J.) Medical Society, and of the Medical Society of the State of New Jersey; one of the visiting surgeons at the Cooper Hospital, died at his home in Camden, May 9, from cirrhosis of the liver, aged 55.

James P. Hughart, M.D. New York University, New York City, 1878; a member of the American Medical Association; a Confederate veteran; president of the board of health of Hin-

ton, W. Va., died at his home in that place, from malignant disease of the mouth, for which operation was performed which checked the malady for a time only, April 28, aged 65.

J. M. Boyd, M.D., founder of Baker City, Ore.; sheriff of Baker County for two terms, and for several years United States marshal for the eastern district of Oregon; for many years health officer of Walla Walla, Wash., and from 1886 to 1877 mayor of that city, died at his home, March 20, from paralysis, after a long illness, aged 68.

Philander Collard, M.D. College of Physicians and Surgeons in the City of New York, 1883; a member of the Medical Society of the State of New York and the Westchester County Medical Society, and once its president; a member of the staff of the Ossining Hospital, died at his home in Ossining, N. Y., from diabetes, May 7, aged 60.

Julius A. Johnson, M.D. University of Maryland School of Medicine, Baltimore, 1871; a member of the American Medical Association, Medical and Chirurgical Faculty of Maryland, and president of the Talbot County Medical Society; county jail physician and pension examining surgeon, died at his home near Easton, Md., May 9, aged 56.

Edwin I. Shores, M.D. Bellevue Hospital Medical College, New York City, 1880; for 12 years surgeon at the Soldiers' Home, Hampton, Va.; surgeon during the Spanish-American War; a member of the Schenectady County (N. Y.) Medical Society, died at his home in Schenectady, May 5, after an illness of three months, aged 51.

John Barry, M.D. Medical College of Virginia, Richmond, 1864; assistant surgeon of the Forty-second Mississippi Infantry, C. S. A., during the Civil War; a member of the Orange County (N. C.) Medical Society, died at his home in Chapel Hill, N. C., March 6, from angina pectoris, after a brief illness, aged 68.

Lawson Allen Long, M.D. Berkshire Medical College, Pittsfield, Mass., 1847, who is said to have warned President Lincoln of the plot for his assassination in 1861, died at his home in Holyoke, Mass., May 6, aged 78. He is said to have been one of the first to note that cholera and yellow fever were filth diseases.

Biddle Arthurs, M.D. Jefferson Medical College, Philadelphia, formerly one of the prominent surgeons of Pittsburg, and a member of the Allegheny County Medical Society, died at his home in Philadelphia, April 19, from cerebral hemorrhage, after an illness of three days, aged 78.

Carrie M. Hayward, M.D. Northwestern University, Women's Medical School, 1897, of Chicago, for eight years a member of the staff of the Mary Thompson Hospital for Women and Children, died in Malden, Mass., May 11, from cancer, after a long illness, aged 35.

Ralph R. Thompson, M.D. Medical College of Indiana, Indianapolis, 1900, of Mooresville, Ind., examining surgeon for the relief department of the Pennsylvania Railroad in Chicago, died at the Gault House in that city, May 4, from acute nephritis, aged 31.

Timothy G. Herrick, M.D. Harvard University Medical School, Boston, 1900, an interne in the Boston City Hospital for three years after his graduation, died at his home in Newport, N. H., from tuberculosis, after an illness of three years, aged 31.

James Ostermann, M.D. Baltimore Medical College, 1904, assistant physician of Salt Lake County, died at the Latter Day Saints' Hospital, Salt Lake City, Utah, May 2, from Bright's disease, after a long illness, aged 32.

John R. Keating, M.D. New York University, New York City, 1857, a Confederate veteran, for many years alderman and mayor of Cleburne, Texas, died at his home in that city, May 1, after an illness of two days, aged 71.

George Cyrus Brown, M.D. Jefferson Medical College, Philadelphia, 1874, for several years health officer of Long Beach, Cal., and a member of the Long Beach Medical Society, died at his home in that city, April 28, aged 57.

R. F. Hall, M.D. Jefferson Medical College, Philadelphia, 1855, a practitioner of Meriwether County, Ga., for more than 50 years, died at his home in Greenville, Ga., April 28, after an illness of eight weeks, aged 76.

Arthur Lee Post, M.D. Johns Hopkins University Medical Department, Baltimore, assistant professor of bacteriology in the West Virginia University, Morgantown, died suddenly in Easton, Md., May 9, aged 56.

Clarence E. Hauver, M.D. Homeopathic Hospital College, Cleveland, Ohio, 1888, of Greenville, Ohio, died in the Memorial Hospital, Piqua, Ohio, May 5, from locomotor ataxia, after an illness of 11 years, aged 48.

A. W. Burton, M.D. Louisville (Ky.) Medical College, of Birmingham, Ala., after killing his wife and fatally wounding A. G. Thaxton, a dentist of Pratt City, Ala., cut his throat and died immediately, April 15.

Naomi A. Pierce Collins, M.D. Women's Medical College, Chicago, 1885, for many years a practitioner of Decatur, Ill., died at her home in Mahomet, Ill., May 3, after an illness of several weeks, aged 44.

David L. De Myers, M.D. Memphis Hospital Medical College, Memphis, Tenn., 1891, died from smallpox, April 29, after an illness of 12 days, near his home at Pearce Station, Tenn., aged about 50.

Edgar L. Draper, M.D. Harvard University Medical School, 1867, surgeon in the Navy during the Civil War, died at his home in Holyoke, Mass., May 6, after an invalidism of a year, aged 64.

William J. Keaney, M.D. Homeopathic Medical College of Missouri, St. Louis, 1888, died at his home in De Soto, Mo., May 3, from ptomain poisoning, after an illness of five days, aged 36.

Delos H. Mann., M.D. Albany (N. Y.) Medical College, 1848; prominent as a physician and as a total abstinence advocate, died at his home in Brooklyn, N. Y., May 2, from pneumonia, aged 70.

Alexander Allan Henderson, M.D. McGill University, Medical Department, Montreal, 1870, died at his home in Ottawa, Ont., May 3, from heart disease, after an illness of six months, aged 60.

Charles H. Holden, M.D. University of Edinburgh, Scotland, 1869, died at his home in St. John, N. B., May 2, from pneumonia, following influenza, after a brief illness, aged 61.

O. D. Fitzgerald, M.D. St. Louis Medical College, 1872, of Los Angeles, Cal., died at the Good Samaritan Hospital in that city, April 28, after an illness of several months, aged 66.

Lewis T. Gandy, M.D. Jefferson Medical College, Philadelphia, 1869, of Chili Center, N. Y., died at the City Hospital, Rochester, N. Y., three days after an operation, aged 58.

Robert Baxter Calvin, M.D. Western Pennsylvania Medical College, Pittsburg, was found dead in bed in his office at Jamestown, Pa., February 19, aged 30.

Edwin H. Chilcote, M.D. Cincinnati College of Medicine and Surgery, 1871, died suddenly from heart disease, at his home in Bloomdale, Ohio, May 4, aged 57.

Richard A. Martin, M.D. Department of Medicine of the University of Pennsylvania, Philadelphia, 1860, died at his home in Philadelphia, April 22, aged 71.

Jonathan G. Helton, M.D. Geneva (N. Y.) Medical College, 1846, of Minneapolis, Minn., died suddenly on a street car in that city, April 28, aged 81.

S. D. McCauley, M.D. Medical Department of Willamette University, Salem, Ore., 1868, died at his home in Ellensburg, Wash., January 21, aged 85.

Marshall K. Sturdivant, M.D. Tulane University of Lousiana, Medical Department, New Orleans, 1873, died at his home in Avinger, Texas, April 26.

Basil B. Crawford, M.D. University of Maryland School of Medicine, Baltimore, 1851, died at his home near Laytonsville, Md., May 4, aged 73.

John W. Winley, M.D. College of Physicians and Surgeons, Baltimore, 1892, died at his home in Benton, Pa., May 9, after a lingering illness.

Samuel Ritter Ickes, M.D. Cleveland Medical College, 1875, formerly of Harrisburg, Pa., and Brantford, Ont., died in Seattle, Wash., April 27.

Thomas H. Rucker, M.D. (County License, Indiana), 1897, died at his home in Arlington, Ind., April 21, after a long illness, aged 66.

Frank Nelson, M.D. (County License, Indiana), 1897, died at his home in Hazelton, Ind., from cerebral hemorrhage, April 29, aged 75.

Charles W. Weaver, M.D. Hahnemann Medical College, Philadelphia, 1884, died May 9 at his home in Taneytown, Md., aged 46.

Oscar H. Bradley, M.D. Castleton (Vt.) Medical College, 1851, died at his home in East Jaffrey, N. H., March 29, aged 80.

Levi Tharp, M.D. (County License, Indiana), 1897, died at his home in Boyleston, Ind., from cerebral hemorrhage, May 8, aged 47.

Charles S. Beck, M.D. Pennsylvania Medical College, Philadelphia, 1853, died in Wilkesbarre, Pa., from uremia, Dec. 25, 1905.

Louise F. Parker, M.D. New England Female Medical College, Boston, 1861, one of the first women practitioners of New England, died at her home in South Weymouth, Mass., May 9, aged 93.

A. R. Clark, M.D. (Examination, Missouri), died recently from cancer of the stomach at Pittsburg, Kan.

Deaths Abroad.

V. Vleminckx, M.D., president of the National Academy of Medicine of Belgium, aged 80.

A. Haslund, M. D., professor of dermatology at Copenhagen, aged 62.

L. Kleinwachter, M.D., professor of gynecology at Prague and Innsbruck until 1881, when he was obliged to give up teaching on account of his alleged atheism, died April 17, aged 67. His name is familiar to readers of journals devoted to obstetrics and gynecology. He resided and practiced at Czernowitz, in Austria.

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS will not be noticed. Queries for this column must be accompanied by the writer's name and address, but the request of the writer not to publish name or address will be faithfully observed.

STATES RECIPROCATING WITH MINNESOTA.

CHICAGO, May 3, 1906.

To the Editor:—What states reciprocate with the state of Minnesota, based on an examination taken before the State Board of Medical Examiners of the state of Minnesota? C. C.

ANSWER.—Illinois Iowa, Kansas, Michigan, Maine, Maryland, Missouri, Nevada, New Jersey, Nebraska, Ohio, South Carolina, South Dakota, Wisconsin and Wyoming.

REGISTRATION REQUIREMENTS.

GRAND RAPIDS, WIS., May 5, 1906.

To the Editor:—What are the requirements for registration in medicine in California and in Washington? W. M. R.

ANSWER.—Both states require the passing of an examination, besides presentation of a diploma from a recognized medical college.

PADUCAH, KY., May 5, 1906.

To the Editor:—In what states can a physician register without examination? C. E. W.

ANSWER.—If he is a graduate of a recognized medical college, in Nevada and New Mexico, and with other restrictions, in Colorado.

CARDIO-RESPIRATORY MURMUR.

PHILADELPHIA, May 1, 1906.

To the Editor:—Will you kindly inform me in "Notes and Queries" of the significance of the so-called cardio-respiratory murmur, that is, a cardiac murmur heard only during inspiration?

Some authorities deny that it is pathologic, while others say that it is probably due to phthisis. In cases in which I discovered it there was no evidence of any abnormality in lungs on close examination. NAGLOC.

ANSWER.—The so-called cardio-respiratory murmur is not an uncommon phenomenon in perfectly healthy individuals. It is presumably produced by some distortion or narrowing of the blood vessels at the base of the heart when the thorax is expanded. Consequently, it may also occur in a variety of mediastinal lesions, in pleuro-pericarditis, etc. Its exact causation is not understood nor is anything definite known in regard to its clinical significance.

CAUSES OF IRREGULAR HEART ACTION.

BINGHAMTON, N. Y., April, 1906.

To the Editor:—Referring to my letter published in THE JOURNAL, April 7, p. 1048, I desire to state that none of the causes mentioned in your reply exist in this case. You may be interested to learn, as I am to report, that for the past two or three weeks the heart has resumed its normal action and that there are no more intermissions of the pulse (which has been marked and continuous for more than two years). I wish I could have an explanation of the cause. M.

THE MOSQUITO IN REFERENCE TO MALARIA.

MOUNT PISGAH, ARK., May 3, 1906.

To the Editor:—Please tell me the best work on the mosquito with reference to malaria. Can malaria be transmitted in any other way than by the mosquito? I have the works of Boston, Osler and Anders, and simply want a more detailed work.

S. T. TAPSCOTT.

ANSWER.—So far as now known, the only way in which malaria is naturally transmitted is by the mosquito. There are a number of short books dealing with malaria and mosquitoes, all of which we shall not attempt to enumerate. Mention may be made, however, of L. O. Howard's book on "Mosquitoes," in which their relation to malaria is discussed fully; of Celli's monograph on malaria, which is translated from the Italian, and in which not only the rôle of the mosquito is considered, but also the economic side of malaria, especially so far as Italy is concerned; and of Ross' discourse before the Royal Institution of Great Britain (March 2, 1900), in which the story of the discovery by Ross himself of the actual rôle of the mosquito to malaria is told in a most interesting manner. This discourse is reprinted in the form of a little booklet (George R. Philip & Son, 32 Fleet Street, London, and Philip, Son & Nephew, 75 South Castle Street, Liverpool). In Manson's Lectures on Tropical Diseases, recently reviewed in THE JOURNAL, is also an excellent account of the malaria parasites as they occur in man and mosquitoes. There are numerous other monographs than those here mentioned, a full list of which any medical book-seller can furnish, but we believe that Ross' discourse merits special emphasis as the nucleus for further reading on malaria and mosquitoes.

THE PHYSICIAN AND THE AUTOMOBILE.

DR. R. L. HOYT, Oriole, Md., writes: "I am contemplating the purchase of an automobile and awaited the appearance of your automobile number, April 21, with interest. After reading it carefully I am in just about the same position as before, namely, I can not decide which machine will do the service I desire. If you will help me out I will be under lasting obligation to you. I wish you would refer this letter to some members of the profession who have experience with conditions such as I describe below, with the request that they write me. I am doing a country practice requiring the services of three good horses in the summer and four in the winter months, with an average daily drive of about fifty to sixty miles. My work is entirely in the country, as the village in which I reside is of about 600 population, but the road conditions are the same as the surrounding territory. From April 1 to November 1 our roads are in good condition, the soil being clay and the roads hard. From November 1 to April 1 they are awful, being simply a clay muck, full of holes and ruts. In winter it is about all two good horses can do to pull a light buggy at a trot. Thank you in advance for any assistance you can render me in this matter."

DR. WILLIAM STANTON, Webster, N. J., says: "I was very much interested in the automobile articles. It seems strange to me that the manufacturers all seem to strive to make an automobile resemble a trolley or steam car in size, weight and seating capacity. In horse-frightening qualities, noise and dust-raising they have the trolley outdone, and are a close second to it in cost, speed and in requiring a hard smooth track. Now, if some manufacturer would turn his skill and attention to produce an automobile resembling a stanhope or carriage in size, weight, appearance and comfort he could doubtless give it wheels adapted to the highway, a motor simple enough to be understood by a man of ordinary mechanical ability, and strong enough to propel it over all ordinary country roads with reasonable speed, safety and certainty. Probably he could sell it for the cost of two good horses, the necessary carriages, harnesses, etc., and make a good profit. I believe there is need of such an automobile and that the man who brings out a practical auto-carriage for country roads will confer a lasting favor on the medical profession and will find himself deluged with orders."

DR. T. M. BRIDGES, Idaho Falls, Idaho, writes: "I have read with interest the interesting articles in THE JOURNAL, April 21, and I wish to ask about solid rubber tires. I have used a runabout for two years with the utmost satisfaction and practically no tire troubles until recently. I have long contemplated putting on solid tires, and will appreciate your advice as to a reliable maker. I do an immense amount of work and have never been towed in or had an accident delaying me more than half an hour. Our roads, however, are perfect almost throughout the year."

DR. S. S. DAVIS, Boonsboro, Md., writes: "Your editorial in THE JOURNAL, April 21, in regard to automobiles for physicians was very opportune and pertinent. I keep three horses and numerous vehicles, and though this liver(y) of mine is kept rather active, I am fast becoming automo-bilious. I have no doubt there are thousands of physicians like myself, waiting for that machine to turn up—the right kind at the right price."

DR. J. A. KINIGAN, New York, writes: "For the past three years I have been making a study of the automobile as applied to the use of the doctor. The symposium on this subject published in THE JOURNAL is the most interesting and instructive dissertation on the automobile that I have come across."

DR. J. G. HUIZINGA, Grand Rapids, Mich., says: "Up to date the machine is not sufficiently reliable. One never knows when a breakdown is going to occur, and it often takes place at most inopportune times. The machines are being made more perfect every year, but perfection is still a future consideration."

DR. DE FOREST LAMBERT, Salem, Mass., writes: "In regard to my ideal car (described in THE JOURNAL, April 21), I have interested a machinist in my specifications, and he already has plans under way for such a car. There are a number of physicians about here who desire such a car, believing that it will to a large extent solve the problem of a doctor's car. If those interested in this type of machine to the extent of desiring one, would write me, some idea of the demand for it could be had and its production hastened. The price would be, probably, in the vicinity of $800, depending on number built. I am informed that the company has plenty of money, but will not place the machine on the market unless a sufficient number will express a demand for it."

The Public Service

Army Changes.

Memorandum of changes of stations and duties of medical officers, U. S. Army, week ending May 12, 1906:

Lippitt, Wm. F., surgeon, resignation of his commission as an officers of the Army has been accepted by the President, to take effect, May 26, 1906.

The following named assistant surgeons will proceed at once to San Francisco, Cal., and report in person to the commanding general, Pacific Division, for temporary duty: Captains Edward F. Geddings, Leigh A. Fuller, Frederick M. Hartsock, Walter D. Webb, David Baker; First Lieutenants George H. Scott, Roger Brooke, Jr., Wm. H. Moncreiff, Nelson Gapen, Compton Wilson.

Hallock, H. M., surgeon, sick leave of absence further extended one month.

Bushnell, Geo. E., surgeon, detailed to represent the Medical Department of the Army at the meeting of the National Association for the Study and Prevention of Tuberculosis, at Washington, D. C., May 16 to 18, 1906.

Wertenbaker, Clark L., contract surgeon, left Madison Barracks, N. Y., on leave of absence.

McCord, Donald P., contract surgeon, returned to Fort Rodman, Mass., from leave of absence.

Hereford, John R., contract surgeon, left Fort Moultrie, S. C., and arrived at Fort Caswell, N. C., for temporary duty.

Kelly, John P., contract surgeon, left Presidio of Monterey, Cal., and arrived at San Francisco, Cal., on duty with the 20th Infantry.

Koyle, Fred T., contract surgeon, left Fort McDowell, Cal., and arrived at Fort Mason, Cal., on duty with the 22d Infantry.

Hayes, Melville A., contract surgeon, left Vancouver Barracks, Washington, and arrived at Fort Casey, Washington, for temporary duty.

Gardner, Fletcher, contract surgeon, left Fort Michie, N. Y., and arrived at Fort H. G. Wright, N. Y., for temporary duty.

Griswold, W. Church, contract surgeon, returned to Fort Dupont, Del., from leave of absence.

Rietz, Hugo C., dental surgeon, left Fort Thomas, Ky., and arrived at Fort Wayne, Mich., for duty.

Porter, Elias H., contract surgeon, ordered to duty with troops in Yosemite National Park, Cal.

Kean, Jefferson R., Woodruff, Charles E., and Lynch, Charles, surgeons, detailed to represent the Medical Department of the Army at the 57th annual meeting of the American Medical Association.

Navy Changes.

Changes in the Medical Corps, U. S. Navy, for the week ending May 12, 1906:

Old, E. H. H., asst.-surgeon, detached from the Naval Training Station, San Francisco, and ordered to the Naval Hospital, Canacao, P. I., sailing from San Francisco, May 25.

Steele, J. M., Medical Inspector, detached from the *Brooklyn* and ordered home to wait orders.

Brown, E. M., P. A. surgeon, ordered to the Naval Hospital, New York, N. Y.

Dorsey, B. H., asst.-surgeon, ordered to the *Lancaster*.

Belknap, J. L., asst.-surgeon, detached from the *Brooklyn* and ordered to the *Kentucky*.

Randall, J. A., asst.-surgeon, detached from the *Kentucky* and ordered home to wait orders.

Bogan, F. M., P. A. surgeon, ordered to the *Marietta*, when that vessel is placed in commission.

Grieve, C. C., asst.-surgeon, detached from the *Wilmington* and ordered home.

Rennie, W. H., asst.-surgeon, detached from the *Elcano* and ordered home.

Verner, W. W., asst.-surgeon, detached from the *Wisconsin* and ordered home.

Wickes, G. L., asst.-surgeon, detached from the *Ohio* and ordered to the *Wilmington*.

Sellers, F. E., asst.-surgeon, ordered to the *Ohio*.

Olsen, G. M., asst.-surgeon, ordered to the *Wisconsin*.

Evtinge, E. C. J., asst.-surgeon, ordered to the *Elcano*.

Blackwood, N. J., surgeon, detached from the Naval Torpedo Station, Newport, R. I., and ordered to the *New Jersey*, when that vessel is placed in commission.

Morris, J., surgeon, ordered to the Naval Torpedo Station, Newport, R. I., and to additional duty in attendance on Navy and Marine officers, not otherwise provided at that station with medical aid.

Hathaway, G. S., asst.-surgeon, detached from the *Constellation* and ordered to the *New Jersey* when the latter vessel is placed in commission.

Cole, H. W., Jr., asst.-surgeon, detached from the *Maine* and ordered to the *Alabama*.

McLean, A. D., asst.-surgeon, detached from the *Alabama* and ordered home to wait orders.

Public Health and Marine-Hospital Service.

List of changes of station and duties of commissioned and non-commissioned officers of the Public Health and Marine-Hospital Service for the seven days ending May 9, 1906:

Balthache, P. H., surgeon, detailed to represent the service at the meeting of the American Medical Association, to be held in Boston, Mass., June 5-8, 1906.

Meade, F. W., surgeon, directed to report in Washington, D. C., for special temporary duty.

Carmichael, D. A., surgeon, granted leave of absence for seventeen days, from May 17, 1906.

Brooks, S. D., surgeon, relieved from "waiting orders" and directed to proceed to San Diego, Cal., and assume command of service at that port.

Woodward, R. M., surgeon, detailed to represent the service at the meeting of the American Medical Association, to be held in Boston, Mass., June 5-8, 1906.

Mathewson, H. S., P. A. surgeon, granted leave of absence for two months, from June 1, 1906.

Earle, B. H., P. A. surgeon, directed to report in Washington, D. C., for special temporary duty.

Frost, W. H., asst.-surgeon, relieved from duty at Ellis Island, N. Y., and directed to report to the medical officer in command, Baltimore, Md., for duty and assignment to quarters.

Addis, W. E., acting asst.-surgeon, granted leave of absence for four days, from May 3, 1906, under Paragraph 210 of the Regulations.

Hallet, E. B., acting assistant surgeon, granted two days' leave of absence from May 6, 1906.

Safford, M. V., acting assistant surgeon, granted leave of absence for three days from April 30, 1906, under paragraph 210 of the regulations.

McKay, M., Pharmacist, granted leave of absence for one day, May 5, 1906.

BOARDS CONVENED.

Board convened to meet in Washington, D. C., May 9, 1906, for the purpose of making sanitary inspection of certain public buildings. Detail for the Board: Surgeon F. W. Meade, chairman; P. A. Surgeon B. H. Earle, recorder.

Board convened to meet at Baltimore, Md., May 10, 1906, for the purpose of conducting physical examinations of cadets of the Revenue Cutter Service. Detail for the Board: Surgeon L. L. Williams, chairman; Asst.-Surgeon W. H. Frost, recorder.

Board convened to meet in Washington, D. C., May 10, 1906, for the purpose of conducting physical examinations of candidates for appointment as cadets in the Revenue Cutter Service. Detail for the Board: Asst. Surgeon-General W. J. Pettus, chairman; Asst. Surgeon-General J. M. Eager, recorder.

Board convened to meet in Washington, D. C., May 7, 1906, for the purpose of conducting physical examinations of an officer of the Revenue Cutter Service. Detail for the Board: Asst.-Surgeon-General J. W. Kerr, chairman; Asst.-Surgeon J. W. Trask, recorder.

Health Reports.

The following cases of smallpox, yellow fever, cholera and plague have been reported to the Surgeon-General, Public Health and Marine-Hospital Service, during the week ended May 11, 1906:

SMALLPOX—UNITED STATES.

California: Los Angeles, April 21-28, 4 cases.
District of Columbia: Washington, April 21-May 5, 4 cases.
Georgia: Augusta, April 2-9, 5 cases; April 23-May 7, 4 cases.
Indiana: Indianapolis, April 1-8, 3 cases; April 29-May 6, 2 cases.
Louisiana: New Orleans, April 21-May 5, 26 cases.
Massachusetts: Boston, April 28-May 5, 1 case.
Mississippi: Natchez, April 29-May 6, 3 cases.
Missouri: St. Louis, April 28-May 5, 1 case.
Nebraska: Omaha, April 28-May 5, 2 cases.
North Carolina: General, March 1-31, 198 cases.
North Dakota: General, March 1-31, 3 cases.
Ohio: Cincinnati, April 27-May 4, 10 cases, 1 death.
Oklahoma Territory: Oklahoma City, April 21-May 5, 31 cases.
South Carolina: Greenville, April 21-28, 1 case.
Tennessee: Knoxville, April 28-May 5, 1 case.
Utah: Ogden, April 1-30, 4 cases.
Virginia: Petersburg, March 26-April 26, 6 cases; Roanoke, April 1-30, 16 cases.
Wisconsin: Appleton, April 28 May 5, 1 case; Green Bay, 1 case; La Crosse, 1 case; Marinette, April 21-28, 2 cases.

SMALLPOX—INSULAR.

Philippine Islands: Manila, March 10-17, 2 cases, 2 deaths.

SMALLPOX—FOREIGN.

Africa: Monrovia, March 1-31, 3 cases.
Austria: Trieste, March 31-April 7, 1 case.
Canada: Toronto, April 21-28, 1 case.
China: Hongkong, March 17-24, 19 cases, 5 deaths; Shanghai, March 24-31, present.
Germany: Bremen, March 31-April 21, 2 cases, 1 death.
Gibraltar: April 15-22, 3 cases.
Great Britain: Bristol, April 14-21, 2 cases; Newcastle-on-Tyne, 3 cases.
Greece: Athens, April 14-21, 3 deaths; Patras, March 20-27, 2 cases, 2 deaths.
India: Bombay, April 3-10, 23 deaths; Calcutta, March 24-31, 224 deaths; Karachi, April 1-8, 34 cases, 17 deaths; Madras, March 31-April 6, 46 deaths; Rangoon, March 24-31, 62 deaths.
Italy: General, March 22-April 19, 176 cases.
Mexico: Vera Cruz, April 21-28, 2 cases.
The Netherlands: Rotterdam, April 14-21, 1 case.
Spain: Barcelona, April 10-20, 7 deaths; Seville, March 1-31, 15 deaths.

YELLOW FEVER—FOREIGN.

Brazil: Rio de Janeiro, March 18-April 15, 11 cases, 7 deaths.
Honduras: Chaloma, April 21, 1 death.

CHOLERA—INSULAR.

Philippine Islands: Provinces, March 10-17, 116 cases, 101 deaths.
India: Bombay, April 3-10, 35 deaths; Calcutta, March 24-31, 31 deaths; Madras, March 31-April 6, 1 death; Rangoon, March 24-31, 3 deaths.

PLAGUE—INSULAR.

Philippine Islands: Manila, March 10-17, 1 case, 1 death.

PLAGUE—FOREIGN.

Australia: Freemantle, March 3-24, 3 cases, 1 death; Geraldton, 2 cases, 1 death; Sydney, March 10-17, 7 cases.
Brazil: Rio de Janeiro, April 1-15, 3 cases, 1 death.
India: Bombay, April 3-10, 782 deaths; Calcutta, March 24-31, 232 deaths; Karachi, April 1-8, 150 cases, 126 deaths; Rangoon, March 24-31, 86 deaths.

Society Proceedings

COMING MEETINGS.

AMERICAN MEDICAL ASSOCIATION, Boston, June 5-8.

American Gynecological Society, Hot Springs, Va., May 22.
South Dakota State Medical Association, Watertown, May 22-24.
Connecticut State Medical Society, New Haven, May 23-24.
Indiana State Medical Association, Winona Lake, May 23-25.
Michigan State Medical Society, Jackson, May 23-25.
Med. Soc. of State of North Carolina, Charlotte, May 29-31.
Rhode Island Medical Society, Providence, May 31.
American Dermatological Assn., Cleveland, May 30-June 1.
American Pediatric Society, Atlantic City, May 30-June 1.
American Surgical Association, Cleveland, May 30-June 1.
American Laryngological Assn., Niagara Falls, May 31 June 2.
American Assn. of Genito-Urinary Surgeons, New York, June 1-2.
American Academy of Medicine, Boston, June 2-4.
Amer. Assn. of Life Insurance Exam. Surgeon, Boston, June 4.
American Gastro-Enterological Assn., Boston, June 4.
American Urological Assn., Boston, June 4-5.
American Proctologic Society, Boston, June 5-6.
American Medico-Psychological Society, Boston, June 12-15.
Massachusetts Medical Society, Boston, June 12-13.
Maine Medical Association, Portland, June 13-15.
Minnesota State Medical Association, Minneapolis, June 20.
West Virginia State Medical Assn., Webster Springs, June 20-22.
Medical Society of New Jersey, Atlantic City, June 19-21.
State Medical Society of Wisconsin, Milwaukee, June 27-29.
American Ophthalmological Society, New York City, June 28-29.

COUNCIL ON MEDICAL EDUCATION OF THE AMERICAN MEDICAL ASSOCIATION.

Second Annual Conference, held in Chicago, May 12, 1906.

There were present delegates from state examining boards, state medical societies, government medical services, colleges of liberal arts and other organizations, as follows:

State Delegates: Colorado, S. D. Van Meter, Denver; Illinois, Harrison W. Hipp, Chicago; Indiana, J. C. Webster, Lafayette, W. A. Spurgeon, Muncie; Minnesota, W. S. Fullerton, St. Paul; Mississippi, E. J. Johnson, Yazoo City; Missouri, Frank J. Lutz, St. Louis; Nebraska, S. K. Spalding, Omaha; New York, W. W. Potter, Buffalo and Charles F. Wheelock, Albany; North Dakota, H. M. Wheeler, Grand Forks; Ohio, A. Ravogli, Cincinnati and H. E. Beebe, Sidney; South Dakota, Stephen Olney, Sioux Falls; Tennessee, L. E. Burch, Nashville; Washington, P. B. Swearingen, Tacoma; West Virginia, M. H. Proudfoot, Rowlesburg; Wisconsin, W. T. Sarles, Sparta, A. P. Andrus, Ashland, and J. V. Stevens, Jefferson.

State Medical Societies: Indiana, J. B. Berteling, South Bend, and L. F. Page, Indianapolis; Kentucky, W. H. Wathen, Louisville; Missouri, R. M. Funkhouser, St. Louis; Minnesota, F. F. Wesbrook, Minneapolis; Illinois, J. W. Pettit, Ottawa, and D. B. Phemister, LaGrange.

American Medical Association, Geo. H. Simmons, Chicago; Committee on Reciprocity, American Medical Association, William L. Rodman, Philadelphia; Association of American Medical Colleges, F. C. Zapffe, Chicago; National Confederation of Eclectic Medical Colleges, E. J. Farnum, Chicago, and E. G. Trowbridge, Chicago; American Medical Editors' Association, W. C. Abbott, Chicago, William F. Waugh, Chicago; Public Health and Marine-Hospital Service, Passed Asst. Surg. G. B. Young, Chicago.

Others present were:

Dr. B. D. Myers, Indiana University, Bloomington; Professor J. H. T. Main, President of Iowa College, Grinnell; Dr. S. W. Lambert, Columbia University, New York City; Dr. Frederic S. Dennis, Cornell University, New York City; Dr. Chas. R. Bardeen, University of Wisconsin, Madison; Dr. John M. Dodson, Rush Medical College, Chicago; Dr. F. C. Waite, Western Reserve University, Cleveland; Professor I. B. Burgess, Morgan Park Academy, Morgan Park, Illinois.

Full reports of proceedings will appear in the next issue of THE JOURNAL.

FIFTEENTH INTERNATIONAL MEDICAL CONGRESS.

Held in Lisbon, Portugal, April 19-26, 1906.

[Special Correspondence from Dr. Nicholas Senn.]

ALGIERS, AFRICA, April 27, 1906.

The Lisbon International Medical Congress has passed into history. Its successes and shortcomings have become matters of record. It was safe to predict that the attendance would be unusually small and that the scientific work would fall short of the average of these triennial great gatherings of physicians from all parts of the globe. The entire number of delegates registered did not exceed 1,600. It could readily be foreseen that two Latin congresses in succession could not fail to reduce the actual attendance to a minimum. A very large majority of the members present were Spaniards, Portuguese and delegates from countries in which the Latin languages are spoken. The United States contributed about 50. Germany was especially well represented in the military section. Few of those from abroad who participated in the Madrid Congress repeated their attendance this year. Most of them had learned from sad experience to dread the miserable railway service and the Babylonic confusion of languages in the general sessions, section work and social functions. The two magnets which attracted not a few to this congress were the beautiful city of Lisbon and the charming Queen Amelia, whose beauty, charity and profound learning have been made known to the outside world through magazine articles and the columns of the public press.

The City of Lisbon.

The average reader accords to Naples the first place among the world's most beautiful cities. The smiling blue bay, the towering, smoking Vesuvius provide a worthy fore- and background for this proud mistress of Italy, but can not serve as a counterpart to the vastly greater picturesqueness of the city of Lisbon as compared to that of Naples. The Tagus, which here is expanded into a broad lake-like basin or quai, constitutes an immense land-locked harbor which is visited annually by 4,000 vessels from all parts of the world—compares well with the Bay of Naples in size and the beauty of its surroundings. The city itself in a dress of immaculate white rises in terraces from the border of the river and crowns the summits of the group of high hills, the highest of them capped by the ancient fortress of St. George, now garrisoned by 400 soldiers. The narrow, crooked, but clean streets communicate with a number of broad, park-like boulevards. Lisbon, although a very old city, has been rejuvenated and has kept pace with the progressive spirit of modern times. It is lighted by electricity and has an excellent water supply and system of sewerage. The numerous electric tramways find their way from the broad avenues through the narrow, irregular, serpentine streets to all parts of the city and suburbs. Many substantial modern business and government buildings impart dignity and an aspect of durability to the principal business streets.

The hotel facilities are ample and there was no undue congestion caused by the presence of the congressites which caused so many complaints during the Madrid congress. Begging and indications of abject poverty were seldom seen on the streets even in the poorest quarters of the city. Two large, clean markets are the busiest places during the early morning hours, where the laboring people can supply themselves with food for the day by the outlay of a few cents, the freshest and best that the soil and sea produce. The present population is about 350,000. The people are well dressed and well behaved.

Queen Amelia.

Queen Amelia is a remarkable woman physically and mentally. She is above average size and weight, and every look and movement denote a noble bearing. A scion of the noblest and most aristocratic family of France, she was trained from earliest childhood for her present exalted position. The large black eyes, firm well-formed lips, high forehead and luxuriant jet black hair, sharp, perfectly modeled nose, heavy eyebrows and long lashes, pearl-white perfect teeth, round chin, fair complexion and perfect form of face make up a picture of classic beauty. She is one of the most intellectual women of the present age. She speaks several languages, among them excellent English; is a member of the medical profession, in which she takes the keenest interest, and is a trained nurse as well. A picture in which she delights and which is very popular among her subjects is the Queen dressed in the garb of a nun rendering first aid to the wounded. The hospital and clinic for patients suffering from tuberculosis is her own creation, built and maintained out of her own private means. She is the mother of two sons, the Crown Prince, now 18 years old, and his brother, two years younger. She is a devoted mother, giving her own attention to the education and training of her

children. She is very wealthy in her own right and makes free use of her wealth in relieving the sick and poor. She was the center of attraction during the opening exercises and at the dinner given by the King to the official delegates of the congress.

Opening Exercises.

The opening exercises took place in the great hall of the Geographical Society at 2 o'clock, Thursday, April 19. The weather was perfect. Long before the hour fixed for the exercises the immense hall and two galleries were densely packed with surging masses of humanity, all in gala attire. High court officials, ambassadors, military officers, university men in scarlet gowns, lent a special attraction to the brilliant audience. Shortly after 2 o'clock the strains of a military band stationed in the rear of the hall playing the national air announced the arrival of the King. King and Queen, followed by the queen dowager and court officials, walked up slowly through the central aisle and took their places on the platform. To the right of the King sat the Queen; to the left his mother, the Queen Dowager. The King is about 40 years of age, a blonde with blue eyes, curled mustache, of average height but very corpulent. He presided with a dignity worthy of his high position. He wore a full dress military uniform with few decorations. The Queen wore a rich but plain gown, her only ornament being a necklace of large pearls which graced her handsome neck. The King read his address of welcome in French from the chair. He spoke slowly and distinctly, and with great earnestness. During the delivery of the speech the silence in the hall was profound, and every word coming from his lips was eagerly caught by those near enough to hear him. I was fortunate enough to be given a place on the platform within ten feet of the speaker, and hence enjoyed to the fullest extent the excellent address so magnificently delivered. I can give here only an abstract.

King's Address of Welcome.

"MADAM, LADIES AND GENTLEMEN:—In uniting in this Congress, so eminently scientific and humanitarian, you are performing a beautiful and worthy deed. First of all, let me congratulate you most sincerely, and in the name of the country which now receives you and of which I am the supreme magistrate, I extend to you all a cordial welcome. As a part of the heritage which the century which we have seen born has bequeathed to our children are these magnificent scientific international gatherings. They attest the solidity and the intellectual fraternity of nations and their representatives come to them bringing the best offerings of their work and their activities. In truth, I repeat, in taking part in this congress you accomplish a good and beautiful work, because nothing is more laudable than a conquest on the vast field of science, nothing is better than the alleviation of pain and distress. Your learned assembly is about to add, I am sure, from all I know of your past, a new and brilliant page to the book of universal science; and the science of medicine is about to pass in review here the thousands of soldiers whom she has temporarily detached from her powerful army in order to camp, to-day in the shadow of the flag of Portugal. Each of you comes to tell both of the severity of the struggles and of the glory of these victories, struggles against evil, the most noble of all combats engaged in, from the field of battle among the cannons which vomit suffering and death, amid fire and tumult, to the serenity, the repose of the laboratory, among the enemies infinitely small, which coldly, silently, without noise or eclat each day strew the earth with more dead than the most destructive implements of war.

"In the six days of the congress, the six mystic days of work, we will see, as in an immense kaleidoscope, rise up facts, observations, analyses, investigations. All these will clash against each other, will be grouped together and displayed in the most varied combinations, bewildering our eyes with unexpected forms of images and thereby giving us an impression of the actual state of medical science and to your confrères the point of departure for new conceptions, for still greater conquests. From this assembly where are united so many savants of such wide renown will descend as from a torch on the highest pinnacle a flood of new light pure and white like that from glaciers, slow in its progress but irresistible in its action, a force to drive back before its power pain and death. Your brains are the source of the stream, brilliant and pure, of the sublime torrent. By their powerful action you blaze the way, open up the bosom of Nature to reveal her secrets which will enable you to render human life stronger and more tranquil.

"You are in a country which knows and appreciates your work, and I can assure you it would be impossible for any country to be more in sympathy with all your actions. Portugal is with you in the accomplishment of that which she knows to be her earthly duty. She never forgets that peoples are citizens of the world, and that just as the citizens of each country have a duty toward their native land, so have nations their duty toward humanity. Portugal has been one of the pioneers in the civilization of the world. She will not renounce her ancient traditions, and with them she receives you on a civilizing mission for the good of humanity. As for me personally, I am entirely in accord with you. Having been an ardent lover of the natural sciences, I admire, comprehend and respect you; and I am happy to be able to assure you that you may rely on me to do everything in my power to aid you. As for her Majesty, the Queen, my beloved consort, in the work she has done with others in the combat against tuberculosis, she has indeed given you proof of how sincerely she is in sympathy with your work. In closing, I wish to thank the committee of organization of the congress for requesting me to preside at this inaugural session. I am very grateful for this honor, and I am proud to find myself here to-day, your president, and to be able again to join my most sincere wishes to those of my country, which is proud to receive and welcome you to-day in its capital city, that the results of this congress may serve the cause of humanity. The congress is now open."

The exit of the royal party was made in the order and manner as its entrance, the audience standing and the band playing. Much of the balance of the afternoon was occupied by additional speeches of welcome and the responses to them by delegates from each country represented, the call for those being made in alphabetical order. That no country was overlooked became evident when a physician from Monaco was called on to respond and although he represented the smallest government in the world, he occupied vastly more time than Captain Richard of the Army, who responded in a few well-chosen words for the United States.

Place of Meeting.

All of the work of the congress took place in the new medical college, including registration and all executive business. The arrangements here were perfect and all officials courteous and obliging. The building is a modern one, and proved admirably adapted for the needs of the congress. Business was conducted much more promptly and systematically than at Madrid. Exhibitions were conspicuous for their absence, and physicians who came here for the purpose of collecting a supply of proprietary medicines were sadly disappointed. The well-equipped laboratories were at the disposal of the delegates, who made free use of them in making their demonstrations. As all the sections met in the same building, it was easy to go from one to the other, either for the purpose of change of subject under discussion or to meet friends. It is true if the congress had been large the space for the general meetings and section work would not have sufficed. As the attendance was small, ample room was given to each section with the exception, perhaps, of the military, which afforded scant space for sixty persons, and being the one which on an average had the largest attendance, it was sometimes badly crowded.

Scientific Work.

The subjects of the general addresses were modern and opportune. They comprised: "Relations of Acute Infectious Diseases with Tuberculosis," by Dr. Aaser of Christiania; "The Prophylaxis of Yellow Fever as the Result of the 1905 Epidemic in Central America and New Orleans," by Professor Boyce of Liverpool; "Infantilism," by Dr. Brissaud of Paris; "The Mechanism of Reflexes and of Muscular Tonus," by Professor Crocq of Brussels; "The Significance of Domestication for Diseases of Animals and Man," by Professor von Hansemann of Berlin; "The Anatomic Causes of Syphilitic Relapses and

Methods to Follow to Combat Them," by Professor Neumann of Vienna; "Local Anesthetics," by Professor Reclus of Paris; "Radium in Biology and Medicine, or Organo-therapy of Our Days," by Prince Jean de Tarchanoff of St. Petersburg. I had the honor to deliver the oration for the United States and selected for my subject: "A Plea for the International Study of Carcinoma," at the close of which I suggested the appointment of an international committee to study this subject from non-parasitic standpoints and to report the results of their work to the next congress. [This article appeared in THE JOURNAL, April 28, 1906.]

The programs of all the sections, as usual, contained more material than could properly be disposed of even in six days. Many of the titles lacked the paper as well as the author. This vicious practice of sending in titles and names without any intention on the part of the prospective authors to attend the congress should be suppressed. This practice is by no means uncommon and is a cheap and cowardly way to get names into print, and is always a source of embarrassment to the officers of the sections. Another practice equally detestable is to gorge the programs of the sections with the titles of papers read perhaps years ago before some medical society, large or small, as the case may be, without the authors having made any material alterations or additions. This dishing up of stale food on such important occasions can not be

Fig. 1.—The King and Queen of Portugal.

done away with too soon. The section work of the congress is in need of revision to the effect of reducing the number of papers and the exclusion of material that has done previous service. There is too much reading in the sections and too little discussion and demonstration. Many a time have I seen more than half of the members napping during the reading of a long paper in a monotonous, even tenor of voice. Interesting demonstrations, on the other hand, no matter whether or not the language of the speaker is understood, always rivet the attention of the audience.

Language of the Congress.

The three official languages of the congress are supposed to be French, German and English, but during the Madrid and Lisbon congresses Spanish, Italian and Portuguese were not infrequently made use of. French was the prevailing language and next came German. I admired the Germans for remaining faithful to their mother tongue, although it found few receptive ears. The English language was seldom heard, and when spoken fell on barren ground. When I presented my paper on "First Aid on the Battlefield," in the Military Section, there were about 60 members present, and of this number I am sure that not more than four or five understood a word of what I said. I was prepared for this kind of an audience, and only occupied a few minutes in presenting the salient points of the paper and in making some demonstrations, and in doing so held the attention of the audience. As Americans, it is our imperative duty to give countenance to the language of our country and to popularize the same on all occasions. The English language to-day is the commercial language of the world, the German and French remain the polite languages. It is safe to predict that if at any time a single language is to be the official language of the congress it will be the English, in spite of the opposition made to it up to the present time.

Social Entertainments.

This, like all the previous congresses, has been surcharged with social entertainments of all kinds, including excursions to suburbs on the River Tagus, bull fights, receptions, dinners, garden party, etc. For the American delegates the most notable entertainments were a dinner given by Colonel Bryan, our minister plenipotentiary at the court of Lisbon, to the American delegates, and the dinner given by the King to about 150 official delegates representing all nations. Colonel Bryan

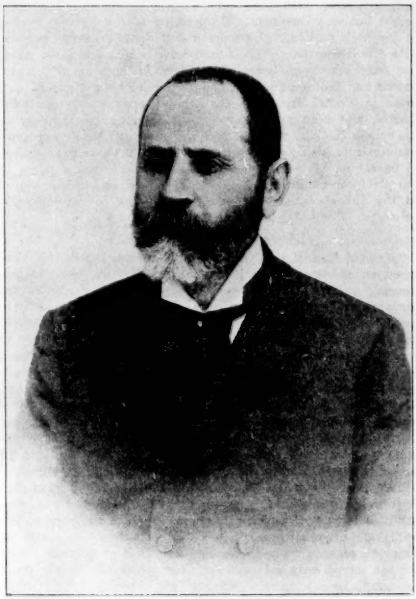

Fig. 2.—Dr. Costa Alemao, President of the Congress.

occupies the Avenida Palace, a former house of royalty, in the most beautiful boulevard of the city. It is a real palace, not only in name, but in its outward and inward appearances, and is maintained as such by its present occupant, who is, besides an able representative of our government, a liberal and charming entertainer. His greatest pleasure is to meet, aid and assist his countrymen. The dinner he gave to the American contingent of the congress was attended by about 50 guests and was in every respect a great success. In this function the host was assisted by his sister, Miss Bryan, and his cousin, Mrs. Page, of Washington, D. C. The table decorations were superb and a splendid band furnished the music. The courses were many, and every one of them testified to the skill of the chef of the kitchen. The mental feast included toasts to President Roosevelt, the King and Queen of Portugal and our honored host. It was after midnight when the well-entertained guests returned to their respective hotels. This occasion was a very pleasant one, and

will live forever in the memory of all those who were present. We have reason to feel proud of our minister at this legation, as he is very popular with the royal family, the natives, and it is his greatest pleasure to be of service to his countrymen.

The King's Dinner.

The dinner of the King was given Saturday evening, at 8 o'clock, April 21, at the palace, and was attended by about 150 of the official delegates, which, with the court officials and ambassadors, brought the whole number of guests up to 200. The American delegation received its full share in this ovation—eight places. The dinner was a very brilliant affair, being attended by the King, Queen, Queen Dowager, diplomats and military officers, all in full-dress uniform. The King wore the same uniform as at the opening exercises, but the Queen appeared in court dress and wore a tiara of diamonds and a broad necklace of precious stones, which dazzled the eyes of the uninitiated. The three flights of stairs we had to

Fig. 3.—Professor Miguel Bombarda, Secretary General of the Congress.

ascend were lined on both sides with halberdiers in ancient costume, so it was impossible to lose the way to the reception room. When the hour for dinner arrived, the royal party walked directly through the passageway made by the separation of the assembled guests and took their seats in the center of the two long tables placed parallel to each other, the King on the left and the Queen on the right side, and the guests followed each of them, supplied with a card which accompanied the formal invitation and which indicated the place and number of their seat. The service was perfect, the menu such as can only be done justice to in a royal kitchen, and all of the wines exquisite. I was fortunate to find Professor Curschmann of Leipsic as my left-hand neighbor, and we enjoyed together, besides the superb dinner, a rich mental feast. The King and Queen were served each by a waiter of their own. After dinner the hosts and guests returned to the reception room, where the presentations took place.

Colonel Bryan performed this function for the American delegates. We were first introduced individually to the King, then to the Queen Dowager and lastly to the charming Queen. Almost without exception the delegates kissed the bare hand of the ladies. This as a citizen of two republics I refused to do on this as well as on several former similar occasions. I look on this custom as a relic of the chivalric age, as effeminate, as improper for any citizen of the Great Republic of the United States to comply with. It is my conviction that it is eminently proper to carry our republican customs with us and practice them abroad as well as at home. It was half-past 12 o'clock when we left the palace. The Portuguese, like the Spaniards, are extremely hospitable people and exert themselves to make the social entertainments pleasant and agreeable for all present. On the whole, the social features of every congress have consumed too much time and have been the means of detracting too much from the scientific work of the meetings. A curtailing of these functions is one of the urgent needs of the International Medical Congress.

Abused Privileges—Delegates and Members.

The present system of delegation of the congress is wrong in more than one way. In the first place, any one can become a member of the congress by paying the stipulated fee. This privilege, extended to laymen and physicians, increases the attendance without adding to the working force of the congress. Many take advantage of this provision in order to secure reduced rates and to take part in the social entertainments of the congress. Such attendance is a heavy ballast on the efficiency of the scientific work of the congress and a source

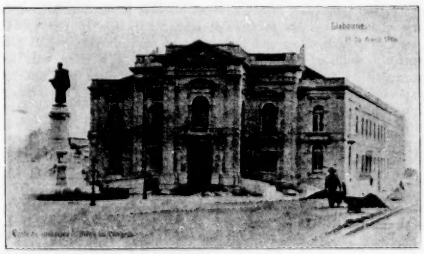

Fig. 4.—The new Lisbon Medical School.

of discomfort to the legitimate members of the congress—the delegates—as they crowd the railway trains and hotels and tax the financial resources of the committee of organization without giving an equivalent of any kind. Lay membership should be abolished. If this were done the doors to the congress would likewise be closed to physicians who have no standing in the profession. In the second place, delegates from disreputable institutions find their way into the congress, although they are not eligible to membership in the smallest and remotest county medical society. Restriction in the matter of appointment and acceptance of delegates should be strictly carried out at the next and all future meetings of the International Medical Congress.

Additional Report of Congress.

From the reports of other representatives and from the accounts in our British, French and Portuguese exchanges THE JOURNAL adds the following details:

The list of presidents of honor appointed for the congress included Nicholas Senn, J. N. Van der Veer and H. E. Bell of this country; Waldeyer, Freudenberg, von Hansemann, Kraepelin and O. Lassar of Germany; Obersteiner and Dollinger of Austria and Hungary; Cornil, Laveran, Bouchard, Landouzy, Poirier, Magnan, Blanchard and Brissaud of Paris, with Pavy Sir Dyce Duckworth, Barlow, D. Ferrier, Mayo Robson and Fergusson of England. The addresses in the 20 different sections and subsections were numerous and many of them were important contributions showing the present status of various medical questions. The views of most of the speakers are

known to our readers, as they have been published or summarized in these columns more or less recently.

International prophylaxis of tuberculosis was urged by S. Bernheim, with the appointment of an international commission to draw up an international code of regulations against the disease. J. Cabral of Lagos presented an exhaustive essay on the subject of epidemic cerebrospinal meningitis based on 178 cases. He found the most effectual treatment to be lumbar puncture either alone or followed by injection of a 1 per cent. solution of lysol or of cyanid of mercury, possibly supplemented by leeches to the mastoid apophyses and wet cupping along the spine, with administration of calomel, opium and bromid. He used also intestinal injection of two quarts of water, alone or with some mild purgative. Weichselbaum attributed the focus of infection and contagion to the nasopharynx. As the micrococcus has little resisting power, it rapidly succumbs outside of the human body. França of Lisbon found lumbar puncture extremely beneficial in his experience with 271 cases, repeated daily or several times a day, withdrawing about 45 c.c. of the fluid, following with injection of some antiseptic. He regards lumbar puncture as curative for the non-bacterial forms of meningitis and palliative at least in the tuberculous form.

DANGER OF MUCH MERCURY IN GENERAL PARALYSIS.

An article on this subject, read by Raymond of Paris elicited corroboratory testimony, although several speakers reported benefit from mild mercurial treatment in the early stages, especially by the Leredde technic.

SURGICAL TREATMENT OF SPASTIC AND PARALYTIC AFFECTIONS.

Vulpius remarked in his address on this topic that although the ultimate results of tendon transplantation in the treatment of contractions and paralyses of nervous origin had not entirely fulfilled the early anticipations, yet they can be regarded as very encouraging. A complete cure can not be expected unless the paralysis is very limited, but satisfactory functional improvement can be counted on for appropriate cases with suitable after-treatment. Examination of patients years after the operation has confirmed the permanancy of the results attained. Redard remarked that periosteal transplantation is preferable to tendon-tendon or muscle-tendon anastomosis and is proving of great benefit in treatment of nervous deformities. S. de Sousa of Lisbon usually prefers arthrodesis to transplantation of tendons for all paralytic affections except those involving the hands. Barbarin called attention to the fact that tendon transplantation or transference can be effectual only when the tendon can be transplanted without tension which reduces its contracting power.

Codivilla of Bologna reported that he has done 415 of these transplanting operations. His experience has demonstrated that good results are never obtained when the muscles are already weakened by some morbid process. They must be capable of an excess of work. He also found that the older the muscles, the less their ability to adapt themselves to new conditions.

ABDOMINAL TUBERCULOSIS.

Broca of Paris commented on the present reaction from the general endorsement of surgical treatment for tuberculous peritonitis. Only about 30 per cent. of the cases treated surgically have remained well for more than two years afterward, according to the latest statistics. The form with acute onset and rapid collection of ascites usually subsides spontaneously. If not, the abdomen should be opened, but not drained. Local abscess formation and complications should be supervised and operated on at need.

UTERINE FIBROMAS.

Pfannenstiel of Giessen argued that as fibromas develop on a basis of chronic endometritis, the rest of the uterus is not sound, and the organ should be removed unless conservative measures are indicated in the exceptional cases. Retention of the diseased mucosa may entail menorrhagia later or placenta prævia. One of his patients succumbed to hemorrhage from placenta prævia a year or so after a conservative myotomy. If the uterus is infected the vaginal route is indicated. C. do Pinho of Porto gave as an explanation of the autointoxications of pregnancy that all the poisons generated in the body from various sources are augmented in the pregnant woman, and if they are not eliminated in increased measure trouble is sure to result. The physician should supervise the eliminating functions and strive to keep them equal to their increased task. The total number of official addresses on the program was over 250, on 140 different topics.

OTHER PAPERS READ.

Among the other communications was one by Cajal reporting researches which have confirmed the independent evolution of the axis-cylinders, and thus sustain the conceptions of His in regard to their monogenesis and also Monroe's assumptions. An animated discussion followed Hasebroek's endorsement of Swedish gymnastics in treatment of angina pectoris (an article by him on this subject is summarized on page 1570). J. Cabral described some cases of what he calls "family cerebral diplegia." Jonnesco of Bucharest reported his experiences with 159 operations on the sympathetic, bilateral in nearly every case, thus bringing his total to 314 sympathectomies. His results in 25 cases of exophthalmic goiter have been especially fine. He regards extensive resection of the cervical sympathetic as the only successful means of treating this affection. He has found it also the best means of curing glaucoma, and reported 91 cures by this means. The results are less favorable in epilepsy, his record being only about 12 cured in 100 cases. Loeffler reported the successful immunization of cattle against foot-and-mouth disease. In a demonstration of Sauerbruch's air cabinet, dogs were anesthetized and extensive operations performed on the thorax. F. B. Turck of Chicago spoke on his experimental production of gastric ulcer in dogs. R. Bensaude of Paris presented two patients in good health six and eight years after extensive resection of the stomach on account of cancer with cachexia. Several other physicians reported similar experiences with long survivals after resection of the stomach for malignant disease. Unna described a new method of staining for the bacillus of leprosy, and emphasized the necessity for continuous treatment of the disease, both general and local, without intermissions. The lepromas must be destroyed to the last traces. A brief course of treatment, although it may apparently have cured the patient, is of no permanent benefit. Chaulmoogra oil is his main reliance. G. Fisac of Madrid presented testimony to confirm the assumption that workers in lime kilns are immune to tuberculosis. The inhalation of lime dust seems to render them refractory to tuberculosis. He has been treating tuberculous patients with lime dust and reported encouraging results. G. W. McCaskey of Fort Wayne presented arguments to prove that absorption of toxins from the intestines was responsible for the development of arterial hypertension under certain circumstances. D. R. Brower of Chicago outlined the proper methods of caring for the acute insane in general hospitals. Two communications that are said to be epoch-making were presented by ophthalmologists: "Serotherapy in Ophthalmology," by T. Axenfeld of Freiburg, and "The Shape of the Crystalline Lens during Repose and Accommodation in the Eye of the Monkey," by von Pflugk of Dresden. Schaudinn was greeted as "the man of the hour."

NEXT MEETING PLACE HUNGARY.

On behalf of the American Medical Association and other scientific bodies, Guiteras invited the next congress to meet at New York. Guisy invited the congress to Athens, and Oishi to Japan, but the delegates from Hungary were able to state that the formal invitation they presented was backed by the government, which had already appropriated $50,000 for the purpose. The invitation of the Hungarians was accepted and the next congress appointed for 1909 at Budapest.

The prize of $1,000, endowed by the city of Moscow, was presented to A. Laveran of Paris, the discoverer of the hematozöon of malaria. The prize of $600, founded by the surplus left from the Paris International Medical Congress in 1900, was awarded to Ehrlich of Frankfort a. M. for his work on serumtherapy, immunization and the side-chain theory. He visited America in 1904, our readers will remember, to receive an honorary degree conferred on him by the University of Chicago.

MEDICAL AND CHIRURGICAL FACULTY OF MARYLAND.

The 108th Annual Meeting, held at Baltimore, April 24 26, 1906.

(Continued from page 1470.)

Importance of Early Recognition and Operative Treatment of Malignant Tumors.

DR. J. C. BLOODGOOD said that the experience at the Johns Hopkins Hospital showed that of malignant tumors of the breast about 47 per cent. were cured for three years. Recoveries are found up to nine years, and the Germans have observed them up to fifteen years. Mediastinal growths are found in these cases. About 10 per cent. developed late recurrences. Involvement of the supraclavicular glands is considered by the Germans to render the case hopeless; but one case of this has been noted at the Hopkins. There should be no delay in removing any tumor of the breast in a woman over 26. The character of the operation depends on the nature of the tumor. The more readily the diagnosis of cancer can be made, the worse is the prognosis, and vice versa. In a considerable number of instances the diagnosis can not be made; on these the prognosis is highly favorable. Eight other cases of malignant tumor of the thyroid have been noted. Small tumors in patients over 30, which are mostly cystic, should be removed at once. Malignant bone tumors are unnecessarily fatal. It is not creditable to the profession to treat these cases as rheumatism and to deprive patients of their only hope for life. A wrench of the shoulder may develop a sarcoma. The *x*-ray is helpful in the diagnosis.

Analytical Study of Acute Lobar Pneumonia.

DR. J. A. CHATARD gathered statistics from the records of the Johns Hopkins Hospital for the past sixteen years, during which time there were 658 patients treated for pneumonia, excluding ether pneumonias. Of this number 200 died, a percentage of 30.39, though if terminal pneumonias are excluded the number of deaths is 165, or 25.07 per cent. The greatest number of cases occurred in young adults from 20 to 40 years old—55 per cent. In early adolescence the mortality is low —4 per cent.; during the period of greatest frequency, 20 to 30 years, it is 44 per cent., and after that period it rises to about 80 per cent. deaths. The male patients numbered 533, with 154 deaths (28 per cent.), compared with 125 females, with 46 deaths (36 per cent.). White, 238 cases, with a mortality of 30 per cent.; foreign, 170 cases, with a mortality of 29.4 per cent.; black, 250 cases, with a mortality of 31.2 per cent. From January to March there is a rise in the number of cases, while during the summer months there is a great diminution in the number of cases, although the mortality is increased. Outdoor occupations, 347 cases, with 34 per cent. mortality; patients with indoor occupations, 274 cases, with 26.6 per cent. mortality. Alcohol was used by 426 patients, with 30.9 per cent. mortality. One previous attack of pneumonia was stated by 88 patients, two previous attacks by eight, three previous attacks by three patients, and one patient claimed to have had four previous attacks. One hundred and twenty-one of the patients were exposed to bad weather, eight to extremes of temperature; there were eight cases in nurses and orderlies, and three cases among doctors. There was a history of tuberculosis in the family in 11.3 per cent. of the patients. All tuberculous pneumonias were excluded from these statistics.

The most frequent symptoms were pain in the side, chill and cough. Abdominal pain was present in 51 of the cases, or 7.7 per cent. The pulse was considered slow when it registered below 90 and of the patients exhibiting this pulse rate 13.6 per cent. died. Patients with a pulse rate below 125 showed a death rate of 14.9 per cent., this medium pulse rate occurring in 50.7 per cent. of the cases. Patients with a pulse over 125 per minute showed a death rate of 49.4 per cent. Temperature was subnormal, below 98.5 in five cases, with two deaths; between 100 and 102 in 39 cases, with 13 deaths; between 102 and 104 in 49 cases, with six deaths, and between 104 and 106 in 384 patients, with about 27.7 per cent. mortality. The temperature was above 106 in 49 patients, with 55 per cent. of deaths. The admission temperature was generally between 102 and 104, though in one-sixth of the patients it was below 100. The respiratory rate was rapid in the majority of cases, those patients exhibiting labored respiration and cyanosis having a high mortality, about 43.2 per cent. The sputum in the majority of the cases was mucopurulent, tenacious and rusty. In 93 cases the pneumococci were found in the sputum.

In 354 cases the right side was involved, with a mortality of 26.5 per cent.; the right lower 139 times. The left side was involved alone 168 times, with a mortality of 20.2 per cent. In double pneumonia the mortality was about 54 per cent. Pneumococci were isolated from the blood in 25.2 per cent. of the cases, and of these 69.1 per cent. died. The joints were aspirated in three cases and the cocci were obtained in one case. There were 338 cases of pleurisy, with a mortality of 51.2 per cent. Empyema occurred in 27 cases. Pericarditis was present in 35 cases, mortality, 82.8 per cent.; endocarditis 13 times, mortality, 76.9 per cent.; and jaundice in 76 cases, with 21 deaths. This latter complication, jaundice, varied in frequency with the years. In 1901 there were 28 cases, 13 in 1902, and only six in 1900, though there were the greatest number of cases during the latter year. There were 13 cases of meningitis, all fatal. The greatest number of cases showed a leucocyte count of between 25,000 and 30,000, with the lowest mortality—19 per cent. The highest mortality occurred among the cases with the lowest leucocyte counts (below 10,000), also when extremely high. Albumin was present in the urine of 541 cases, casts in 107 cases, and the diazo reaction in 16.8 per cent. Bile was present in 34.3 per cent. Peritonitis, tonsillitis and arthritis occurred each three times. There were eight cases of septicemia, 149 cases of delirium, with about 47 per cent. mortality, 12 cases being admitted with delirium. Herpes was noted in 180 cases and not noted in 265. Where a note was made herpes occurred on the lips in 87 patients, on the nose in 43, on the ears in 3. Among the special features delayed resolution was noted in 35 cases and relapses occurred in 5 patients. The average blood pressure was between 125 and 155 mm. of mercury. Terminal pneumonia occurred 35 times. Defervescence was considered as a true crisis when occurring in twelve hours or less; protracted when occurring in from twelve to twenty-four hours. True crises occurred in 21.6 per cent., and it was protracted in 15.5 per cent.; there were 17 cases of pseudo-crisis. The crisis was usually associated with a fall in the number of leucocytes. The crisis most commonly occurred from the seventh to the ninth day, though there was one case occurring on the third day and one on the fifteenth.

Stimulants were used in 536 cases and symptomatic treatment was employed in 460 cases. Measures employed were the ice bag, poultices, sponges, oxygen and in a few cases the antipneumococcus serum. The serum gave little, if any, good results. Typhoid fever occurred in 21 cases as an associated condition, nephritis 18 times, and heart lesions occurred next in order of frequency.

Among the other papers read were: "Cervical Adenitis (Glandular Fever)," Dr. H. T. Marshall; "Tumors of the Breast," Dr. A. McGlannon; "Hydrotherapy in Private Practice," Dr. J. E. Gichner; "Thrombosis of the Bulb of the Internal Jugular Vein of Otitic Origin," Dr. J. J. Carroll. There were lantern demonstrations on "Insects that Transmit Disease," by Dr. William T. Watson, and "Milk Supply in Foreign Countries," by Dr. J. S. Fulton. A portrait of the late Prof. Richard McSherry was presented to the society by his sons, the speech being made by Dr. S. K. Merrick.

Officers Elected.

The following officers were elected for 1906-07: President, Dr. Hiram Woods, Baltimore; vice-presidents, Drs. William T. Watson, Baltimore, Philip Briscoe, Island Creek, and William F. Hines, Chestertown; secretary, Dr. John Ruhrah, Baltimore; treasurer, Dr. William S. Gardner, Baltimore; trustee, Dr. James M. H. Rowland, Baltimore; council, Drs. Robert W. Johnson, Baltimore; Samuel T. Earle, Jr., Baltimore, Clotworthy Birnie, Taneytown, Paul Jones, Snow Hill, and Guy Steele, Cambridge; committee on scientific work and arrangements, Drs. Arthur P. Herring and G. Milton Linthicum; committee on legislation, Drs. William H. Welch, John D. Blake and John W. Chambers, Baltimore; committee on library, Drs. J. Whitridge Williams, Henry B. Jacobs, J. Frank

Crouch and Harvey W. Cushing, Baltimore, and Dr. William R. Dunton, Jr., Towson; delegate to American Medical Association, Dr. G. Lane Taneyhill, Baltimore, with Dr. Brice W. Goldsborough, Cambridge, alternate. Drs. J. McPherson Scott, Hagerstown, and Edwin J. Dirickson, Berlin, were re-elected on the State Medical Examining Board.

FLORIDA MEDICAL ASSOCIATION.

Thirty-third Annual Meeting, held at Gainesville, April 18-20, 1906.

The President, DR. JAMES M. JACKSON, JR., Miami, in the Chair.

Addresses of welcome were delivered on behalf of the city by Hon. W. R. Thomas, mayor; on behalf of the board of trade by Hon. W. W. Hampton, and on behalf of the Alachua County Medical Association by Dr. J. Harrison Hodges. The president, Dr. James M. Jackson, Jr., Miami, responded to the addresses of welcome.

Quarantine and Yellow Fever.

The papers of especial interest at this meeting were those relative to yellow fever and quarantine. Dr. Eduardo Andrade, Jacksonville, read a paper on "What Services Can the Laboratory Render in the Diagnosis of Yellow Fever"? Dr. Warren E. Anderson, Pensacola, presented some thoughts on the recent epidemic of yellow fever, and Dr. Hiram Byrd, Jacksonville, delivered an address on national quarantine. The matter of national quarantine seemed to meet with favor, although it was manifest that the method proposed would result in opposition from some of the states affected.

One of the most interesting essays was that by Dr. J. Harris Pierpont, Pensacola, on "Medical Materialism."

Election of Officers.

The following officers were elected: President, Dr. John MacDiarmid, De Land; vice-presidents, Drs. William P. Lawrence, Tampa; S. R. Mallory Kennedy, Pensacola, and James M. Dell, Gainesville; secretary and treasurer, Dr. J. D. Fernandez, Jacksonville (re-elected); librarian, Dr. James D. Love, Jacksonville; delegate to the American Medical Association, Dr. Joseph Y. Porter, Key West; state health officer and alternates, Drs. J. Harrison Hodges, Jacksonville, and J. Harris Pierpont, Pensacola. It was decided to hold the next meeting at Tampa.

ARIZONA MEDICAL ASSOCIATION.

Fifteenth Annual Meeting, held at Phoenix, April 24 and 25, 1906

The President, DR. J. W. COLEMAN, Jerome, in the Chair.

The address of welcome to the delegates was delivered by Dr. D. A. Fowler, Phoenix, and was responded to by Dr. John S. Barrett, Prescott.

Approval of Council on Pharmacy—Disapproval of Insurance Fee Cutting.

The following resolutions were unanimously adopted:

Resolved, That the Council on Pharmacy and Chemistry, as organized by the American Medical Association, be commended for its valuable work in disseminating knowledge to the profession regarding proprietary and other drugs and medicines, and that this association heartily endorses this work.

Resolved, That this association recommends to the regular physicians of this territory that five dollars ($5.00) should be the minimum fee for all old-line life insurance examinations.

The annual essay was presented by Captain Henry D. Thomason, assistant surgeon United States Army, Whipple Barracks, and with three exceptions the program as printed was carried out.

Election of Officers.

The following officers were elected: President, Dr. Otto E. Plath, Phoenix; vice-presidents, Drs. William V. Whitmore, Tucson; R. A. Hitteman, Bisbee; R. L. Lowry, Prescott; secretary, Dr. John W. Foss, Phoenix (re-elected); treasurer, Dr. Ralph S. Arons, Roosevelt (re-elected); censor, Dr. John W. Flinn, Prescott; delegate to the American Medical Association, Dr. Clarence E. Yount, Prescott, and alternate, Dr. John W. Foss, Prescott.

Book Notices

NEUROTIC DISORDERS OF CHILDHOOD, Including a Study of Auto and Intestinal Intoxications, Chronic Anemia, Etc. By B. K. Rachford, M.D. Cloth. Pp. 440. Price, $2.75. New York: E. B. Treat & Co., 1905.

This is an interesting work, having as a nucleus several papers written by this author during the last few years. The general theme is that of the normal instability of the nervous system in early life due to the immaturity of nerve cells, especially of the inhibitory centers, plus the effect of various pathologic conditions on these unstable cells. As a result of this combination, immature nerve cells and a varied pathologic state, we see nervous disturbances more easily precipitated in the child than in the more self-controlled adult.

The book is divided into two sections, part I taking up general principles, part II dealing with the application of these general principles to specific neuroses. There is first described the normal function of nerve cells: the generation, discharge and control of energy. A discussion of the heat-generating apparatus next follows, the sudden accumulation and equally sudden dissipation of heat being described. The suddenly high temperatures of early life are attributed to the instability of the thermic centers and the weakness of the thermo-inhibitory centers, while the sudden drops are attributed to the rapid action of the heat-dissipating mechanism, this rapid action being due chiefly to the proportionately greater surface of radiation in the child. The net result of these two processes is the wide oscillations in temperature so familiar in early life.

The subject of intestinal and autointoxications receives careful attention, the author attributing much importance to the action of the xanthin and purin bodies on the unstable nerve cells. Incompetency of the liver, either from hereditary or other causes, is regarded as an important factor in the working of these bases, as a competent liver "stands guard" and prevents their absorption from the intestinal tract. Laboratory experiments are adduced in support of his theory as to the injurious effects of these bodies. These effects assume varied shapes, giving rise to widely differing clinical pictures according to the age of the individual. Thus, in the young, lithemia is attributed to the action of the xanthin and purin bodies, while in later life their presence gives rise to albuminuria, and by their irritating presence in the circulation, to arteriosclerosis with resulting cerebral hemorrhage. On this basis he sees a kinship between these various processes.

The relation of neurotic disorders to anemia is discussed. Anemia plays an important part in these disorders by causing a malnutrition of the nerve centers, thus rendering them more unstable than ever. It is stated that anemia itself, however, is only a symptom, a secondary affair arising from a more deep-seated trouble, the most common causes being chronic intestinal troubles, tuberculosis, syphilis, malaria, rheumatism and rachitis; and to the accompanying anemia rather than to any specific toxin the author attributes the nervous disorders seen in these affections. Thus he sees an intimate relationship between tuberculosis and certain neuroses, insanity, chorea and incontinence. These are all manifestations of great nervous instability on the part of nerve centers insufficiently fed with anemic blood.

A chapter on reflex irritation shows the important part played by reflex causes in producing nervous disturbances. These causes constantly irritate nerve centers, stimulating them to great activity. It has been shown that as a result of activity on the part of nerve cells these cells become fatigued, consequently more unstable than normal and, therefore, more easily upset. Obviously any cause acting as do reflex causes over long periods of time will tend to produce prolonged nervous fatigue and thus lead to nervous disturbances. Furthermore, it has been shown that the process of resting on the part of the nerve cell takes a longer time than does the process of becoming tired out, hence the long time required for the correction of a chronic neurosis, for example, incontinence of urine after removal of its reflex cause, e. g., a tight prepuce.

The first section closes with an excellent plea for more rational and less strenuous methods in the education of our

children, which the author most truthfully maintains lead to much nervous exhaustion. He advocates more parks and playgrounds in our large cities. An especially valuable suggestion is, that promotion from grade to grade shall depend more on the child's physical condition and less on his mental showing. The child's capacity for school work is more dependent on his physical status than on his age and mental advancement.

Part II is a specific application of the general principles laid down in part I, the author using as illustrations, eclampsia, incontinence, laryngismus stridulus, migraine, epilepsy, recurrent vomiting and chorea. He reiterates his belief in the kinship of migraine and epilepsy, citing cases in which the one has merged into the other. His classification of the different clinical forms of epilepsy, however, seems forced. He divides them into three groups: developmental (idiopathic), organic, toxic. The essential factor in the first group he regards as a lack of development of the higher inhibitory centers which control the lower convulsive centers, an hereditary predisposition. This is perhaps as good a conception of true or idiopathic epilepsy as any, considering our ignorance of its real cause and nature. His second group is not genuine epilepsy at all. The attacks in this class are "epileptiform" seizures and are due to some gross cerebral lesion, e. g., an old hemorrhage cyst, and should be given the name of this gross lesion. In the third group the essential factor is an autotoxin, which acting on an individual already predisposed produces epilepsy, but on one not so predisposed causes some other neurosis, e. g., migraine. Thus here as in group 1 the important factor is an hereditary predisposition without which the author believes the individual would not have epilepsy; hence it would seem better to class these so-called toxic cases under the first group, thus giving us (a) idiopathic, and (b) organic.

The author seeks to prove by citation of cases the principles already discussed, yet in these very cases we see illustrated the weakness of his work. Throughout the book, up to this point, he has laid great stress on the important rôle played by the xanthin and purin bodies in the causation of these neuroses, citing the frequent occurrence of these bases in the urine as proof of his theories; but in the 15 cases cited we find a report on the urine in only two! In these two cases the urine contained acetone and diacetic acid. This omission shows in a nutshell the weakness of the whole book. The work lacks sound foundation in facts. There is too much theory. "I believe" and "it is my belief" occur far too frequently; "it has been proved" far too infrequently. The author is dealing with conditions concerning which our actual knowledge is extremely limited and in which there is excellent opportunity for theorizing; of this opportunity he has availed himself to the full. This is, perhaps, proper to a certain extent, but we must not be carried away by the plausibility of the author and accept as fact what at present is unknown and purely theoretical. Nevertheless the book is valuable and well worthy of careful study both by the pediatrician and the general practitioner. Its chief value lies in the emphasis placed on the important rôle played in the nervous affairs of early life by anemia and malnutrition from whatever cause, and by intestinal poisoning and the vital importance of correcting these basic conditions. This writer, at least, is not blinded by the symptom which happens to loom largest at the moment, but he strives diligently to go to the root of things. And perhaps, after all, he is not far from the mark in emphasizing nerve instability (that is as good a term as any at present) and intestinal toxemia as the roots to be aimed at. Certainly his results are better than his theories, for his patients do well under the treatment he practices, even though the exact way in which these results are attained is somewhat obscure.

We regret exceedingly to see mentioned in a work by a man of such reputation such proprietary medicines as "Kutnow's powder," "colchi-sal," etc., even though it be done unwittingly, as it undoubtedly is in the present instance.

A TEXT-BOOK OF PSYCHIATRY, for Physicians and Students. By L. Bianchi, M.D. Authorized Translation from the Italian by J. H. MacDonald, M.B., Ch.B. 106 Illustrations. Cloth. Pp. 904. Price, $6.00 net. New York: William Wood & Co.

The translator of this work expresses the opinion that it will prove a valuable addition to English psychiatric literature, which is a very moderate recommendation, considering that the work is one of the leading Italian treatises on mental disorders and the only one that has thus far been put in English for the benefit of the English-speaking public. Professor Bianchi's position among the active workers in this department is alone such as would insure his work a welcome. The size of the book may appear at first sight a little formidable, but it is fully justified by the author's handling of his subject. It is divided into three parts. Of these the first, comprising 175 pages, is devoted to an exposition of the physiology of the brain according to the later data. Bianchi does not appear to be an adherent of the neuron theory, but holds rather that the researches of Apathy and Bethe, confirmed by others, have reinstated the old nervous reticulum of Golgi though in a somewhat modified form.

Part second, comprising over 200 pages, is devoted to an examination of the pathologic modifications of the various psychic functions and is largely psychologic. The subjects of perception, attention, memory, ideation and feeling and volition are each interestingly discussed in their relation with abnormal mental phenomena and the author's wide acquaintance with psychologic theories and literature is very much in evidence.

Part three commences with a chapter on the methods and fields of clinical inquiry, followed by a chapter on classification, a subject which he treats respectfully though pointing out its difficulties and its theoretical futility. His classification is his own. He divides the mental affections into three great groups. The first comprises the affections due to original psychocerebral defect; the second includes the infective autotoxic and toxic psychoses occurring in individuals normally evolved; the third includes all the disorders due to a substratum of organic disease. The inclusion of epileptic insanity in the first class, when it is so largely non-evolutionary in its origin, may seem a little out of place, but that it often falls under this head can hardly be denied. Similarly, delinquency as a mental disorder may not be entirely acceptable to everyone, but in treating it here Bianchi is in accord with a large class of thinkers, especially of the Italian school. Hysteria, developmental paranoia, developmental neurasthenia and sexual psychopathies naturally fall under this head, with the phrenasthenias at the other extreme of the scale.

In the second group it is noteworthy that this text-book, while recognizing the work of the Germans, does not accept Kräpelin's conceptions of mania and melancholia or dementia præcox, but follows rather in the old lines based on the clinical experience of the majority of practitioners in the past. Pure mania and melancholia are recognized as independent of each other and dementia præcox Bianchi considers as only one clinical variety out of many of sensory or hallucinatory insanity. Mental confusion comes under the same class in the author's opinion, though he does not deny the possibility of a primary form. It is worth noting here also that Professor Bianchi does not altogether support the very commonly repeated opinion that the Italians, using only pure wine and very little other intoxicants, do not suffer from the abuse of alcohol. On the other hand, he attributes a very considerable portion of the mental disease and criminality in Italy to the abuse of alcohol.

In his third group paresis naturally calls for most attention, and Bianchi considers syphilis as only one out of a number of its possible causes, and gives considerable importance to heredity in its causation. A valuable feature of the work is the clearness of statement as to the author's views on the various controverted points, together with a fair statement of the opposite views. The descriptions are clear and the translation has apparently preserved the style and readableness of the original. The translator has done a favor to English-speaking readers in thus putting in their hands one of the very best of the foreign text-books of the day.

THE DYNAMICS OF LIVING MATTER. By J. Loeb, Professor of Physiology in the University of California. Cloth. Pp. 233. Price, $3.00. New York: The MacMillan Company, 1906.

Since 1894 Columbia University has been issuing from time to time books on the biologic sciences, based on the lectures given by distinguished biologists, both of its own faculty and from outside. The latest addition to the series, and of the

greatest interest to medical men, is this book by Professor Loeb. The author represents perhaps the foremost of the great school of physiologists who are endeavoring to solve the intricate problems of the vital phenomena by going to the bottom of the scale of evolution, and studying the effects of the simplest possible substances and forces on the simplest possible forms of living matter. There can be little room for question that this is the proper way in which to seek for a correct understanding of the so-called "vital processes," for if we can not interpret the phenomena that are observed in the multiplication of a single cell, such as the egg of an invertebrate or the processes of repair of the simple hydroids, what likelihood is there of our understanding the infinitely more complicated processes of the mammalian organism? Being based on a series of open lectures, these fundamental problems and the results so far obtained in their investigation are discussed by Professor Loeb in a broad and general manner, covering the essential principles of life phenomena as now understood by the biologist. Living organisms are considered "as chemical machines, consisting essentially of colloid material, which possess the peculiarities of automatically developing, preserving and reproducing themselves," and in every consideration of the phenomena exhibited by living organisms the attempt is made to bring them into a field of the simplest of chemical and physical processes possible. The physician who desires to acquaint himself with the recent advances in fundamental physiology, as well as to get a glimpse into the life processes of the simpler living forms, will find unending interest and stimulation in this book.

State Boards of Registration

COMING EXAMINATIONS.

INDIANA Board of Medical Registration and Examination, Indianapolis, May 22-24. Secretary, W. T. Gott, Indianapolis.

NEW YORK State Boards of Medical Examiners, Albany, May 22-25. Secretary, Charles F. Wheelock, Albany.

ILLINOIS State Board of Health, Coliseum Annex, Chicago, May 23-25. Secretary, J. A. Egan, Springfield.

NEBRASKA State Board of Health, State House, Lincoln, May 29-30. Secretary, George H. Brash, Beatrice.

MINNESOTA State Board of Medical Examiners, Old State Capitol Building, St. Paul, June 5-7. Secretary, O. E. Linjer, Minneapolis.

WYOMING Board of Medical Examiners, State Capitol, Cheyenne, June 6. Secretary, S. B. Miller, Laramie.

MICHIGAN State Board of Registration in Medicine, Ann Arbor, June 12. Secretary, B. D. Harison, Sault Ste Marie.

TEXAS State Board of Medical Examiners, Dallas, June 12. Secretary, T. T. Jackson, San Antonio.

OHIO State Board of Medical Registration and Examination, Cincinnati, Cleveland and Columbus, June 12-14. Secretary, George H. Matson, Columbus.

BOARD representing the Medical Society of Delaware and Board representing the Homeopathic Medical Society of Delaware State and Peninsula, former held at Dover and latter at Wilmington, June 19. Secretary, P. W. Tomlinson, Wilmington.

NEW JERSEY State Board of Medical Examiners, Trenton, June 19-20. Secretary, E. L. B. Godfrey, Camden.

NEW YORK Boards of Medical Examiners, Albany, June 19-22. Secretary, Charles F. Wheelock, Albany.

PENNSYLVANIA State Board of Medical Examiners, Annex Hotel, Pittsburg, and North Building, Philadelphia, June 19-22. Secretary, Joseph E. Willetts, Pittsburg.

VIRGINIA State Board of Medical Examiners, Richmond, June 19-22. Secretary, R. S. Martin, Stuart.

MARYLAND Board of Medical Examiners, Baltimore, June 20-23. Secretary, J. McP. Scott, Hagerstown.

SOUTH CAROLINA State Board of Medical Examiners, Columbia, June 26. Secretary, W. M. Lester, Columbia.

Arizona April Report.—Dr. Ancil Martin, secretary of the Board of Medical Examiners of Arizona, reports the written examination held at Phoenix, April 2-3, 1906. The number of subjects examined in was 9; total number of questions asked, 90; percentage required to pass, 75. The total number of applicants examined was 12, of whom 11 passed and 1 failed. The following colleges were represented:

PASSED. College.	Year Grad.	Per Cent.
Medical College of Ohio	(1901)	75
National Med. Coll., Mexico City	(1887)	75
Drake University	(1905)	85
Missouri Med. Coll.	(1899)	83.3
College of P. and S., San Francisco	(1904)	76.3
Kansas Med. Coll.	(1893)	75
McGill University, Montreal	(1900)	86
Rush Med. Coll.	(1899)	86
Barnes Med. Coll.	(1904)	75, 77.4
Harvard Medical School	(1894)	81
FAILED.		
Hospital Coll. of Med., Louisville	(1900)	49.5

Idaho April Report.—Dr. J. L. Conant, secretary of the Idaho State Board of Medical Examiners, reports the written examination held at Pocatello, April 3-4, 1906. The number of subjects examined in was 13; total number of questions asked, 110; percentage required to pass, 75. The total number of candidates examined was 19, of whom 13 passed and 6 failed. The following colleges were represented:

PASSED. College.	Year Grad.	Per Cent.
College of P. and S., Chicago	(1904)	78.4, 85
Trinity Med. Coll., Toronto	(1883)	75.1; (1895) 85.8
University of Minnesota	(1902)	83.6
Rush Med. Coll.,	(1896)	75; (1906) 88.1
University of Michigan	(1901)	77.5
Baltimore Med. Coll.	(1893)	81.1
Northwestern University	(1901)	87.3
Columbian University	(1902)	85.5
University of Vermont	(1891)	77
Milwaukee Med. Coll.	(1905)	77
FAILED.		
Chicago Homeo. Med. Coll.	(1879)	70.5; (1880) 66.6
University of Iowa	(1895)	72.2
Barnes Med. Coll.	(1898)	51
Rush Med. Coll.	(1889)	72
Jefferson Med. Coll.	(1895)	67.8

The following questions were asked:

MATERIA MEDICA AND THERAPEUTICS.

1. State the average dose of the following: (1) fluid extractum aconiti, (2) alumnum, (3) chloralum hydratum, (4) fluid extractum buchu, (5) hydrargyri chloridum corrosivum, (6) tinctura lobelia, as an expectorant, (7) syrupus senegæ, (8) spiritus glyceryll nitratis, (9) oleum picis liquidæ, (10) liquor potassii arsenitis. Dosage should be given according to the U. S. P. 1900. 2. Name ten anthelmintics. 3. Name five official preparations of Ipecacuanha, and state the average dose of each. 4. What is cocain? Give the physiologic effect of cocain on (*a*) the conjunctiva, (*b*) the pupil of the eye, (*c*) respiration, (*d*) temperature. 5. Define: (1) Hemostatic, (2) styptic, (3) ecbolic, (4) sialagogue, (5) myotic, (6) antihydrotic, (7) antizymotic, (8) cholagogue, (9) vesicant, (10) galactagogue. Give an example of each. 6. Name ten alkaloids and the drugs from which they are obtained. 7. Give the therapeutic uses of phenylis salicylas. 8. Mention five purposes for which diaphoresis is produced. 9. Give the dose and therapeutic uses of spartelnæ sulphas. 10. Give the therapeutic uses of guaiacol.

GYNECOLOGY.

1. Define: (*a*) Endometritis; (*b*) endocervicitis; (*c*) perimetritis; (*d*) salpingitis; (*e*) peritonitis. 2. How would you treat prolapsus uteri? 3. What is nymphomania, and how would you treat it? 4. Give symptoms, diagnosis and treatment of urethral caruncle. 5. Differentiate between suppression and retention of the urine. 6. What is the difference between menstruation and ovulation? 7. What is a vesico-vaginal fistula, and how would you treat it? 8. Mention two ways in which fistula is liable to result from ignorance or carelessness on the part of the obstetrician. 9. Give etiology, symptoms and treatment of vaginal cysts. 10. Name and describe four varieties of myofibromata of the uterus.

THEORY AND PRACTICE.

1. Give etiology, symptoms, diagnosis, prognosis and treatment of pyelitis. 2. Give etiology, symptoms, diagnosis and treatment of endocarditis. 3. Give etiology, symptoms, prognosis and treatment of acute intestinal atrophy. 4. Name the complications and sequelæ of scarlet fever and give preventative and curative treatment for each. 5. Give etiology, symptoms, varieties and treatment of stomatitis in children. 6. Cerebrospinal meningitis: Give etiology, symptoms, diagnosis, prognosis and treatment. 7. Give treatment for (*a*) acute ptomaine poisoning, (*b*) bronchial asthma, (*c*) acute catarrhal gastritis, (*d*) icterus neonatorum. 8. Give pathology, symptoms, diagnosis, prognosis and treatment of osteomalacia. 9. Give symptoms, varieties and treatment of eczema. 10. Give treatment for pneumonia and complications.

OBSTETRICS.

1. Define: Fetus; funis; placenta prævia; souffle; ballottement. 2. What evils may result to (*a*) child and (*b*) mother from prolonged second stage of labor? 3. How would you accomplish delivery where child's arm is displaced back of neck? 4. Give treatment of hemorrhage of third degree at close of labor. 5. Give symptoms, etiology and treatment of phlegmasia alba dolens. 6. What is the mechanism of labor in L. O. A. and L. O. P. position? 7. Give complete directions for, and five precautions to be observed in, applying the forceps. 8. How would you treat ophthalmia neonatorum immediately? 9. Describe the process of podalic version. 10. Give two distinct indications for podalic version.

DIAGNOSIS.

1. Give differential diagnosis between simple catarrhal laryngitis, spasmodic laryngitis, laryngismus stridulus and membranous croup. 2. Give diagnosis of mucous colitis. 3. Give differential diagnosis between glaucoma and iritis. 4. Give microscopic findings in examination of sputa in acute tuberculo-pneumonic phthisis and croupous pneumonia with full directions for staining and examining. 5. Differentiate bronchial asthma, cardiac asthma, hysterical dyspnea and uremic asthma. 6. Differentiate nephrolithiasis, cholelithiasis and calculous cystitis. 7. What may we learn by a careful examination of the blood? 8. What may be learned by a careful examination of the tongue? 9. Explain the reflexes and name the principal ones. 10. Name four instances of referred pain and give location and character of the lesion producing it.

CHEMISTRY AND TOXICOLOGY.

1. Give formula for ammonia gas, ammonium hydroxid, water, sodium chlorid, corrosive sublimate, potassium chlorate, carbon dioxid, silver nitrate, hydrochloric acid, and nitric acid. 2. Carbon dioxid: Give properties, occurrence, preparation, test, effects on plant and animal life. 3. Water: Mention properties, boiling point, freezing point, describe distillation, mention nature of substances not removed by distillation. 4. What is aqua regia? valence? ozone? combustion? element? 5. Give comparative composition of cow's and breast milk. 6. Describe a reliable test for albumin. 7. What are some common drugs used in suicide.? In accidental poisoning? 8. Give treatment for poisoning by each drug named above. 9. What is paris green? Mention its toxic symptoms. Give treatment of paris green poisoning. 10. Mention the dangerous drug in each of three patent or proprietary medicines. (You may use hive syrup, catarrh cure, cough medicines.)

PHYSIOLOGY.

1. What are carbohydrates? hydrocarbons? proteids? Mention a specimen of each. 2. Describe the digestion of each. 3. Describe the process of absorption in the alimentary canal, stating the substance absorbed in each division. 4. What is glycogen, chyle, chyme, myosin, epiphysis? 5. Describe human blood. 6. Describe the general circulation; the portal circulation. 7. What changes are produced in the air by respiration? 8. Explain how the temperature of the body is maintained and regulated. 9. What are the functions of the white and gray matter of the brain? 10. What would be the effect of a transverse section of the anterior root of a spinal nerve? the posterior root? an efferent nerve? an afferent nerve? How is a divided nerve restored?

HYGIENE.

1. Give some directions for the care of a pregnant woman. 2. State how air becomes vitiated. How is vitiated air purified? 3. Name some diseases that are hereditary. How may they be prevented? 4. State the hygienic care and treatment for a person afflicted with tuberculosis. 5. What relation has food to good health? 6. What sanitary care should a state provide for its citizens? 7. What restrictions should the state impose on the marriage relation? 8. Give some directions for the hygienic care of pubic schools and school children? 9. Name some of the bad effects of feeding impure milk to children. Give direction for securing a supply of pure milk. 10. Name some contagious diseases. How can they be to a large extent prevented?

ANATOMY.

1. Give the origin, insertion, function, innervation and blood supply of the (*a*) biceps, (*b*) gastrocnemius, (*c*) quadriceps extensor, (*d*) occipito-frontalis, (*e*) sternocleidomastoid. 2. Define the terms: (1) Lien, (2) epiphysis, (3) cubitus, (4) collum. (5) volar, (6) syndesmology, (7) foramen, (8) hiatus, (9) teres, (10) antrum. 3. Describe the ulna and name the muscles attached to it. 4. Name the viscera wholly covered by peritoneum. 5. Number and name the laryngeal cartilages.

HISTOLOGY.

1. Name the elementary tissues and describe one of them. 2. Describe non-striated muscle and mention five places in which it may be found. 3. Describe a typical medullated nerve fiber. 4. Describe the histologic appearance of a cross section of the small intestine. 5. Define the terms: (1) Cell, (2) nucleus, (3) protoplasm, (4) sarcolemma, (5) axon, (6) reticulum, (7) cortex, (8) medulla, (9) neuroglia, (10) erythrocyte.

SURGERY.

1. Iridectomy: (*a*) Describe the operation for artificial pupil; (*b*) for closed pupil from iritis; (*c*) for glaucoma. 2. (*a*) In antrum operations for mastoiditis, what variations in anatomic relations should be kept in mind? (*b*) What two particular tissues should not be wounded? 3. Describe the amputation of the foot, when neither injury nor disease of the os calcis is present. 4. Nasal neoplasms: (*a*) Name three most common benign; (*b*) describe each separately; (*c*) name the most common malignant one. 5. (*a*) Name the varieties of bone fracture; (*b*) what are the especial features of gunshot fractures? 6. Complete backward dislocation of proximal phalanx of thumb. (*a*) What is the main obstacle to reduction? (*b*) what tissues are injured? (*c*) how would you reduce it by manipulation? (*d*) when by arthrotomy describe the procedure. 7. Femoral hernia: (*a*) Most common in males or females. Why? (*b*) Differentiate femoral from inguinal hernia; (*c*) when strangulated, where is the seat of constriction? (*d*) describe modern radical operation closing the entire canal. 8. End-to-end anastomosis of jejunum: Give technic, describing sutures used and how applied, instruments and other apparatus required. 9. Fibroid tumors of the uterus: (*a*) Is a fibroid a benign or malignant growth? (*b*) does it ever undergo transformation into another kind of neoplasm, if it does what is it? (*c*) from what locality of the uterus does fibroid usually start? (*d*) how are they classified with relation to normal uterine structures? (*e*) at what period of life are they most commonly observed? (*f*) are they more commonly found in multiparous or nulliparous women? (*g*) what are the symptoms of fibroids? (*h*) differentiate fibroids from pregnancy, ovarian cysts; (*i*) give treatment for fibroids. 10. What is your treatment for asphyxia? (*a*) during chloroform ether anesthesia, (*b*) in resuscitation of the apparently drowned?

PATHOLOGY.

1. (*a*) After death, how many hours supervene before rigor mortis is established? (*b*) In what order do the muscles become fixed, and in what order does rigor mortis disappear? (*c*) how long after rigor mortis is established before it disappears? 2. (*a*) What are the methods employed for preserving pathologic specimens, and preparing them for study? (*b*) give formulas for different processes of preparation. 3. (*a*) What is hemorrhage by rhexis, diapedesis? (*b*) what is understood by the term transudation, what is a hematoma? 4. Give the general methods and principles of artificial immunization of an animal susceptible of communicable diseases. 5. Paris green poisoning, suicidal intent, male, age 24, weight 165 pounds, apparently healthy, poison injested one hour after hearty meal, lived 18 hours, what were the macroscopic findings at post-mortem, 6 hours after death. 6. Pathologic polynuclear leucocytosis occurs in how many of the following diseases: Typhus fever, pneumonia, diphtheria, malaria, scarlet fever, measles, tuberculosis, erysipelas, rheumatism; name them; under what conditions is physiologic polynuclear leucocytosis observed? 7. (*a*) In myocarditis what particular tissues are primarily involved? (*b*) describe the arterial anastomosis in the deep heart muscle; (*c*) from what source does the heart receive its nutrient supply, other than the coronary arteries? 8. (*a*) Is a so-called lymph gland, in the true sense of the word a gland? If not what is it? (*b*) what is its function? 9. Acute diffuse nephritis: (*a*) What structures are involved? (*b*) under what circumstances is the medullary portion of the kidney usually the first to be involved? (*c*) what do you understand by the word "diffuse," used to describe this form of nephritis? 10. (*a*) Describe one method of staining the bacillus tuberculosis, gonococcus; (*b*) define hypertrophy, hyperplasia, morphology, neuroglia; (*c*) how do wounded veins heal?

Therapeutics

[It is the aim of this department to aid the general practitioner by giving practical prescriptions and, in brief, methods of treatment for the diseases seen especially in every-day practice. Proper inquiries concerning general formulae and outlines of treatment are answered in these columns.]

Exophthalmic Goiter.

In the treatment of exophthalmic goiter MacKenzie, in the *British Medical Journal*, states that when there are signs of serious conditions, the patient must be given as nearly complete rest as possible of both mind and body, and that so long as the patient is losing in weight, rest must be absolute in order to maintain the strength at the best possible standard. All disquieting influences must be interdicted. These patients must be given words of cheer with the prospects of recovery; at the same time friends and relatives must be given to understand that recovery may be extremely slow. Good food and an abundant supply of fresh air are two important elements in the treatment of this disorder. The patients will do best when kept in the open air, and this open-air treatment is more easily carried out in this disease than in almost any other, as the patients are much more tolerant of cold and feel a great deal better in cool weather than in hot weather. They must be carefully fed and given an abundance of wholesome and nutritious diet. The weight must be observed frequently and, if necessary, the ordinary diet may be supplemented with milk in amounts ranging from two to four pints a day. An adequate amount of fat is also necessary in a great many of these cases. When vomiting is present this author recommends potassium citrate or some bismuth preparation to check it. In other cases it is necessary to suspend feeding for the time and to keep up the best nourishment possible by means of the bowels. In combating the diarrhea, which is frequently one of the most difficult complications to deal with in this disease, great care must be observed in the selection of the food. In excessive cases large doses of bismuth or preparations of tannin are necessary. [The latter preparation may be given in the form of an emulsion by high rectal injections.] Massage is of great benefit in patients who are confined to bed, but must be given very judiciously. Careful attention must be paid to the skin, remembering the great tendency to excessive sweating in these cases. Warm seawater baths or brine baths are sometimes of benefit. When patients are able to travel, a change of climate is of great value, but there can be no regularity as to the exact climate to be prescribed in these cases, as one patient will do better at the seaside, while another will do better inland, or at a higher or lower elevation. The chief object, however, is to place a patient where complete rest and quiet can be obtained, with freedom from noise and friends, where good, wholesome food can be procured, with pure air and pleasant surroundings.

In the medicinal treatment MacKenzie recommends potassium bromid, especially in cases in which the nervous symptoms predominate, and in which there is great restlessness, excitability and emotion. He advises giving the drug in doses of from 20 to 40 grains (1.30-2.65) at bedtime. Preparations of iodin are useful in cases in which the goiter is large or in which it is increasing in size. For this purpose he prescribes the syrup of hydriodic acid, as this is better borne than potassium iodid, and seems practically as effective. This syrup can

be given in doses of one dram each (4.00) three times a day, after meals. The tincture of iodin may be applied externally over the goiter, having the disadvantage, however, of producing a dermatitis.

As regards surgical treatment, he states that the operation is a dangerous one, and that the risks happen to be the greatest in that class of cases which respond least to medical treatment. In cases in which there has been little or no exophthalmos, MacKenzie has had good results from thyroidectomy. Thyroidectomy, however, often fails to cure the disease. Ligature of the thyroid arteries is another operation which has been frequently performed, and while it is less dangerous than thyroidectomy, it is less likely to effect a cure. In summing up, he considers the risk of thyroidectomy to be too great to justify the performance of the operation, except in unusual circumstances, and for the present medical treatment should be the line depended on. This should be carried out with extreme care and perseverance, and if this be done the chances of final recovery, he states, are very good.

Sprained Ankle.

H. G. Johnson, in the *New York Medical Journal*, in speaking of the treatment of sprained ankle, states that if the patient is seen soon after the injury, hot water should be applied to the injured part by pouring it from a pitcher, or bathing the foot in hot water for from five to ten minutes. The ankle should then be wrapped with a bandage, which should be kept moist for from twelve to eighteen hours, during which time the patient should be at complete rest. After the removal of this bandage a gentle massage should be applied to the injured ankle, followed by a strapping of surgical plaster, the technic of which is as follows: A number of strips one inch in width and thirteen or fourteen inches long, should be cut. Beginning at the instep, the middle of each strip of plaster is placed at the bottom of the foot; the ends are carried across the front of the foot to lap over. The second strip covers half the first strip, and so on, up the foot, to within two inches above the ankle. The ankle is then reinforced by two or three additional strips. In two or three days a fresh strapping is applied over the first dressing, and the whole allowed to remain a week or ten days, or until the tenderness and pain are relieved.

Littlejohn, in the same periodical, states that the limb should be thoroughly shaved from the knee downward, and cleansed with soap and water. Ether should then be applied, as this insures better adhesion of the plaster. The foot should be restored to its normal position as far as possible, put in the position of acute flexion, and held by an assistant while the dressing is applied. The correct relation to the foot and ankle are extremely important. A strip of plaster twenty inches long and two inches wide should be fastened about four inches below the knee on the inner side of the leg. This should extend down parallel to the long axis of the limb and along the posterior edge of the tendo Achilles, directed under the heel and up the corresponding outer side of the leg. A second strip of the same size is applied just in front of this and overlapping it about a quarter of an inch. In this way the foot is held in a rude stirrup. These strips limit the lateral mobility of the joint. Another strip an inch wide is started on the dorsum of the foot just behind the insertion of the middle toe, and should be carried back along the inner edge of the foot, around the heel, and back the outer side of the foot to the starting point. A similar strip should be applied higher up and overlapping this strip by a quarter of an inch. Beginning just above the internal malleolus, a strip one inch wide follows the first long strip applied down under the heel and up the outer side of the ankle, to just above the external malleolus. Other strips should be applied in order, until the whole foot and ankle are covered, except the small space at the heel. A light gauze bandage then may be applied, beginning at the toes and extending up the leg. An icebag should then be fastened over the injury, and kept in place for three out of four hours. These applications may be dispensed with at the end of the first day. The limb should be elevated and absolute rest enjoined. After forty-eight hours the patient should be urged to take a few steps, and gradually to increase this exercise until he is able to leave the house. After the second day massage and passive motion are practiced, lasting for about fifteen minutes each time. Patients are instructed to wear the adhesive strips for two or three weeks.

The advantages gained by treating a sprained ankle with adhesive strips, cold applications and rest are summed up by Littlejohn as follows: 1. Swelling and hyperemia are largely controlled by the firm pressure of the adhesive plaster and cold applications. 2. The pain is not nearly so acute nor of so long duration. 3. With less pain the patient is more willing to make early efforts in the use of the joint. 4. The confinement to one room is of short duration. 5. This method of treatment greatly lessens the tendency to painful stiffness and adhesion of the joint, while immobilization methods at times undoubtedly lengthen the convalescence into months of partial disability.

Erysipelas.

In the treatment of erysipelas Dr. I. S. Maximoff, in an abstract in the *Journal of American Medical Sciences*, recommends the following local and constitutional treatment. The local treatment consists of dressing the seat of the disease from two to four times daily with the following combination:

℞ Guaiacol
Tincturæ iodi
Spiritus etheris, ää.....3iss 6
Essentiæ menthæ piperitæ, q. s.....

M. Ft. lotio. Sig.: Apply locally.

Internally he recommends camphor, administered in the powdered form, and giving grs. ii (.12) every two hours during the day, or it may be given in solution in the following combination:

℞ Pulverized camphoræ.....gr. iss |09
Aquæ laurocerasi.....3ss 2
Syrupi simplicis 3iss 6

M. One such dose every two hours, followed by a draught of hot tea.

The administration of the camphor is continued until moderate diaphoresis is established, as this symptom marks the crisis, after which the disease usually subsides.

Castor Oil Made Palatable.

Dr. A. E. Midgely, Oshkosh, Wis., writes concerning his method of disguising the taste of castor oil. He combines it as follows:

℞ Alcoholis 3iii 12
Benzosulphinidi (saccharin).....gr. viii |5
Olei anisi.....m. xvi 1
Olei cinnamomi.....m. xii |8
Olei ricini q. s. ad.....3viii 240

M. Dissolve the saccharine in the alcohol, warming if necessary, then add the oils and shake well. Sig.: Dose the same as of the plain oil.

This mixture, he states, may turn cloudy if cooled, but does not suffer thereby, and again becomes clear on warming to room temperature. Other flavors may be used in place of those given, as, for instance, oil of peppermint, but that has the objectionable feature of causing disagreeable eructations in some individuals. The volatile oils serve the additional purpose of preventing, in a measure, the griping tendency of the plain oil. If the use of the oil is to be continued for any length of time the plain oil is better, as the saccharin in the mixture may cause some digestive disturbance. [The amount of saccharin present in Dr. Midgley's prescription would be likely to cause digestive disturbances and it would probably be better to decrease the amount to one-fourth of the quantity given (gr. ii-0.13).—ED.]

The following combination is said to be an almost tasteless emulsion of castor oil:

℞ Olei ricini 3iv 15
Pulv. acaciæ 3i 4
Syr. aurantii 3i 4
Aquæ cinnamomi q. s. ad.....3i 30

M. Sig.: To be taken at one draught.

In diarrheas brought on by undigested food irritating the

intestinal canal the following combination is recommended to cleanse the intestine and to check the diarrhea:

R.	Olei ricini	3iv	15
	Spiritus vini gallici	3ii	8
	Tinct. opii	m. x	65
	Aquæ cinnamomi q. s. ad	℥i	30

M. Sig.: To be taken at one dose.

Medicolegal

Physician Not a Fellow Servant with Trainmen.

The Second Appellate Division of the Supreme Court of New York holds, in the case of Tingley vs. Long Island Railroad Co., an action brought to recover for the death of a physician struck by a train while attempting to cross in front of or board same, that it was error to allow the defendant railroad company to prove a contract by which the physician had agreed to attend surgically the employés and passengers of the company when called on to do so by its officers and agents. It says that clearly such employment did not make him a fellow servant, and besides at the time of the accident he was going to attend one of his own patients.

Proper Things for a Medical Expert.

The Superme Court of Indiana says, in the case of Swygart vs. Willard, that it is eminently proper that a witness dealing with scientific or technical terms, should, if possible, make his meaning more clear by reference to terms in common use. It was not improper for the same reasons to permit a physician to explain in this case the meaning of "Monomania" as used by him. He was rightly permitted also to explain the distinctive peculiarities of a mind suffering from insane delusions; the symptoms of dementia, and, on a hypothetical statement of facts showing some form of mental unsoundness, to testify under what class of unsoundness of mind the testator should be placed. A medical expert may also explain the effect resulting to the brain, nervous system and body of a man from the excessive use of alcohol.

May Testify as to Statements and Observations.

The Appellate Court of Indiana, Division No. 2, holds, in Indianapolis & Martinsville Rapid Transit Co. vs. Reeder, that the statements of an injured party, made to a physician, expressive of his then present existing physical condition, may be given by the physician as a part of his examination. Again, a physician was asked: "To what extent has this woman suffered pain since this injury was inflicted on her, as you have observed it?" The answer was: "As I have observed it, she has suffered quite a good deal." The objection was made that the question called for a conclusion. If so, the court says, it was one competent for an expert witness to give; but, while the fact might be more keenly appreciated by the person suffering than by an onlooker, it was nevertheless a fact relative to which the onlooker, and especially where he was a physician, might testify.

Damages for Hernia.

The Supreme Court of Washington says that in the personal injury case of Leeson vs. Cawmill Phoenix a jury brought in a verdict of $5,500 damages for an inguinal hernia on the right side caused by a blow in the abdomen from the handle of a chisel thrown back by an alleged defective machine. The plaintiff, who was about 47 years of age, was said by all physicians who testified in the case to be in a healthy normal condition, with the exception of the hernia. There was also testimony that he could probably be cured by an operation which would cost in the neighborhood of $200 or $300. The Supreme Court holds the award under these circumstances excessive, and that $3,500 would be ample compensation. An excessive verdict in a case like this, it says, is not only an injustice to the defendants, but it is a menace to the welfare of the state, and should not be upheld.

Attitude of Court Toward Prescription of Whisky.

The Appellate Court of Indiana says, in De Tarr vs. State, that it is recognized in the medical profession that the use of whisky for medicinal purposes is in many instances salutary and useful. It is often prescribed and recommended by physicians. When there is a substantial compliance with the statute permitting its prescription, and parties act in good faith, this court would be derelict in judicial discretion if it applied the strict letter of the statute, instead of its spirit, and thus protect those who have done no legal wrong. But as against the pernicious habit which had grown up in the state of the indiscriminate sale by druggists of intoxicating liquors, to be used as beverages, under the false guise that such sales were for medicinal purposes, against which the statute was directed, the court unalterably declares in favor of a strict enforcement of the statute.

Tea and Coffee Not "Provisions."

The Supreme Judicial Court of Massachusetts says that the first question in the case of Commonwealth vs. Caldwell was whether tea and coffee are "provisions," within the meaning of a statute permitting the sale of provisions, by peddlers, without a license. The court thinks that they are not. The word "provisions" as used in the statute, it says, has been held to mean "food, victuals, fare and provender." Tea and coffee are not used as food, in the form in which they are sold by shopkeepers. They are used to make decoctions, to be taken as a beverage for their agreeable taste or their stimulating effect. In this respect they are not very different from wine and beer, which in many countries are in common use at meals. Therefore the court is of the opinion that they are not included in the term "provisions," in its ordinary sense, or in the meaning of this statute.

Liability for Medical Attendance on Wife.

The Second Appellate Division of the Supreme Court of New York says, in re Stadtmuller, that a husband died three weeks after his wife did, but a short time before his death he paid the physician who attended his wife during her last illness. Both husband and wife left estates. The will of the wife directed that all her just debts and funeral expenses be paid. Could his administratrix recover from his wife's estate the amount of the physician's bill so paid? No. So long as the wife lived with her husband, he, and he alone, was liable to the physician as for necessaries supplied to the wife, in the absence of agreement between the wife and the physician that credit should be extended to her. No such agreement was shown to exist. Under such circumstances neither the wife nor her estate would have been liable, in the absence of special direction in her will that such payment be made. It was different with regard to her funeral expenses.

Health Officer Entitled to Full Salary of Office.

The Second Appellate Division of the Supreme Court of New York says that the proceeding in People on the relation of Leitner vs. Sipple and others as town board of audit was to review and correct the action of the board in reducing the compensation of the relator as health officer of the town to $25 for the year 1904, from $100, as fixed by the board of health of the town in pursuance of the provisions of the statute. It did not seem to be questioned that he held the office of health officer of the town, although there was some claim that he had not discharged the duties of his office. But, the court says that, as it views the case, this did not concern the board of audit. If he held the office, so long as he was not removed, he was entitled to the salary which had been affixed to the office by competent authority. The facts as they appeared from the return, in connection with the petition, showed that he was entitled to an audit of the remainder of his claim. The determination of the town board of audit should therefore be annulled and such claim remitted to the board, with instructions to audit the same at the rate of $100 a year for the period during which he acted as health officer.

What Constitutes the Loss of a Hand?

The Supreme Court of Nebraska had presented to it by the case of Beber vs. Brotherhood of Railroad Trainmen the question of whether a total loss of three fingers and an injury to the remaining finger and thumb, which materially interferes with their use, and a cutting away of a part of the palm

of the hand, constitute a total loss of the hand within the meaning of a by-law of a mutual benefit association, which provides indemnity for any member in good standing suffering "by means of physical separation, the loss of a hand at or above the wrist joint." The District Court decided that it does not; that under such a by-law recovery of indemnity can be had only on proving that the entire hand was severed at or above the wrist joint. But the Supreme Court holds that the lower court erred in taking that position, and directing a verdict for the defendant. It holds that the question was one to be submitted to the jury for its determination, and there leaves it.

Current Medical Literature

AMERICAN.

Titles marked with an asterisk (*) are abstracted below.

Medical Record, New York.

May 5.

1 *Case of Heteroplastic Ovarian Grafting, Followed by Pregnancy, and the Delivery of a Living Child. R. T. Morris, New York.
2 Practical Significance of Our Knowledge of Bacteria in Their Relation to Pneumonia. A. Wadsworth, New York.
3 *Case of Syringomyelia with Partial Macrosomia. M. G. Schlapp, New York.
4 *Exercise. J. W. Wainwright, New York.
5 *Rheumatic Manifestations in Children. M. H. Sicard, New York.
6 *Formation of a Cul-de-sac for an Artificial Eye. F. Valk, New York.
7 Strangulation of Small Intestine Through a Slit in the Omentum. C. Goodman, New York.
8 *Foreign Body in the Orbit. T. A. Boot, Holland, Mich.

1. See abstract in THE JOURNAL, April 28, 1906, p. 1310.

3. **Syringomyelia with Partial Macrosomia.**—Schlapp's patient, a man aged 38, had been well up to two years ago. At this time he had an attack of indefinite illness followed by a swelling of the left shoulder, arm and hand to about twice their normal size. They have since been somewhat larger than the right arm and hand. There is complete loss of the pain and thermal senses over the whole of the left arm and hand, and on the surface of the back and chest, neck and back of head. There were attacks of total blindness in the left eye lasting about five minutes. The bones were involved as well as the soft tissues. They show greater opacity than do the normal bones. In this case there is a paralytic dilatation of the blood vessels with edema caused by a lesion lying remote from the hypertrophied tissue and in no way directly affecting it. Schlapp thinks it probable that the tissue hypertrophy is the result of the bioplastic as well as the katabiotic process.

4. **Exercise.**—Wainwright states that every physician ought to understand something of the methods of "mechanico-therapeutics," and should avoid vague expressions such as "out-of-door life," "muscular exercise," and so on, when consulted as to the propriety of exercise in an individual case. For practical purposes the moderate use of dumb-bells, Indian clubs, developing machines, bicycling, horseback riding, walking and similar methods of exercise, will accomplish much in promoting the physiologic functions of organs, and thus assist in great part to ward off the ravages of disease.

5. **Rheumatic Manifestations in Children.**—Sicard gives the following résumé: Rheumatism in nursing infants is very rare; in childhood the disease is atypical, the joint signs being but little marked; the so-called complications are in children rather types of the disease, for they may occur without joint symptoms, either alone or associated with each other. The whole attack, while seemingly mild and subacute, is capable of causing severe damage to other structures, notably the endocardium, pericardium and the nervous system. Relapses occur and patients are often left invalids for life.

6. **Cul-de-Sac for Artificial Eye.**—Valk's patient, a woman, was injured by a rocket stick which fell, burnt end downward, passing through the brim of her hat. It lacerated the eyeball, tore out the lower part of the conjunctiva and the free border of the lower lid, and passed down through the cheek and out below. The eyeball seems to have been torn out and probably also part of the muscular cone. The outer part of the orbital plate of the superior maxillary bone near the articulation of the malar seems to have been fractured, but the infraorbital nerve was not injured. The superior lid and cul-de-sac were intact and normal. Valk operated for the purpose of forming a lower cul-de-sac so that an artificial eye could be worn, following out the method of Weeks. He does not know what the complete final result in this case will be, but at present he considers the operation a success.

8. **Foreign Body in Orbit.**—Boot reports the case of a patient from whose eye he removed a fragment of clay pipestem one and five-eighth inches long, one-quarter of an inch in its widest diameter, and weighing 50 grains. It had been lodged in the orbit forty-nine days.

New York Medical Journal.

May 5.

9 Clinical Manifestations of the Toxemia of Pregnancy. (To be concluded). J. C. Edgar, New York.
10 *Experience with Downes's Electrothermic Angiotribe in Pelvic and Abdominal Surgery. J. W. Bovée, Washington, D. C.
11 *Use of Rubber Gloves in Medical Wards. T. W. Clarke, London.
12 *What Medical Subjects Can Be Taught Efficiently in the Literary Schools? F. S. Lee, New York.
13 Causes of Injuries Among the Insane. J. T. W. Rowe, New York.
14 Exploration of the Chest and Physical Signs in Beginning Pulmonary Tuberculosis. G. Mannheimer, New York.
15 Department of Pulmonary Tuberculosis (Out Patient) of the R. I. Hospital for Five Years, ending June 30, 1905. J. Perkins and P. Williams, Providence, R. I.
16 Multiple Wounds of Stomach and Intestine in a Child Five Years of Age. J. H. Jopson, Philadelphia.

10. See abstract in THE JOURNAL, Jan. 6, 1906, p. 65.

11. **Rubber Gloves in Medical Wards.**—Clarke advocates the use of rubber gloves in medical wards for the purpose of protecting the patient from the physician, the physician from the patient, and one patient from another. He has made use of rubber gloves in performing infusions, venesections, intravenous injections, paracenteses and lumbar puncture. He considers the use of rubber gloves during vaginal and rectal examination a great safeguard against syphilitic infection. The nurse, too, is protected against infection by the use of the gloves to be worn while handling specific cases, giving inunctions, douches, enemata, etc. Their use also prevents the spread of infectious diseases and suppurative conditions in general from one patient to another. The technic of caring for the gloves consists of washing them immediately after use, boiling for a few minutes, drying thoroughly and powdering inside and out with talcum powder.

12.—See abstract in THE JOURNAL, March 31, 1906, p. 982.

Boston Medical and Surgical Journal.

May 3.

17 The Physician's Duty to His Fellow-Practitioner and to Himself. W. Lindley, Los Angeles.
18 *Treatment of Joint Disease by Passive Congestion. H. F. Hartwell, Boston.
19 *Some Etiologic Suggestions. F. C. Wellman, Benguella, Angola, West Africa.
20 Supplementary Note on a Spirochete Found in Yaws Papules. F. C. Wellman, Benguella, Angola, West Africa.
21 *Influence of Dampness of Soil, and Climate on the Diseases of Respiration. H. J. Barnes, Boston.
22 *A Consideration of the Treatment of Autointoxication or Autoinfection When They Are the Cause of Mental Disturbance. (Concluded). L. V. Briggs, Boston.

18. **Treatment of Joint Disease by Passive Congestion.**—Hartwell reports the results obtained in the treatment of ten cases of joint disease by passive congestion. He says that the treatment must be considered an adjuvant to mutilating operations rather than a substitute. Its success depends on the quality of the blood which the individual presents to combat the disease. In acute or subacute inflammations the best results are obtained in gonorrheal joints, especially in those which tend to anchylosis or in which the inflammation leads to bad stiffness. The duration of the congestion in acute or subacute joints other than tuberculous depends on the effect it produces. If the patient states that after one or two hours' congestion the pain is relieved and motion is increased, this length of time is sufficient, but if the pain soon returns a longer period of congestion must be maintained.

Most of the cases treated by Hartwell represented well-advanced types of the disease so that they presented a most discouraging outlook when treatment was commenced. In each case, however, the passive congestion shortened the course of treatment of these diseased joints and by its means excellent results were obtained where in some the only outlook seemed to be in operative interference.

19. **Some Etiologic Suggestions.**—Wellman discusses the significance of an embryo intestinal worm found in the blood stream and the possible connection between chiggers and ainhum. He is of the opinion that *S. penetrans* plays a part in the production of ainhum.

21. **Influence of Damp Soil and Climate on Respiratory Diseases.**—Barnes believes that the conclusions to be drawn from the evidence at hand is that all diseases of respiration are common enough regardless of dry or damp soils, in hot or cold, moist or dry, climates to at least raise a doubt if these conditions have any influence whatsoever as a cause of the diseases of respiration. An excessively dry air, he states, which Nature nowhere provides, but which we create in winter by raising the temperature of air holding a very small volume of watery vapor, and thus lower the relative humidity to an extent sufficient to impair the resisting powers of the mucous membrane lining the respiratory tract, may be a factor in the increased prevalence of respiratory diseases in cold weather.

22. **Treatment of Autointoxication or Autoinfection.**—The treatment employed by Briggs in an average case of mental disease in which the cause is autointoxication or autoinfection includes a tonic before meals, antiseptic with meals and two hours after meals, daily colonic flushings with normal salt solution, and baths of salt water lasting from twenty minutes to an hour at night. The diet is regulated and consists entirely of milk at first. If there be much decomposition in the stomach, lavage is resorted to. The antiseptics and tonics are varied in quantity and kind according to the individual or the results obtained of antiseptics. In cases in which there has been actual damage to the brain, the treatment has shown that the progress of the disease can be stopped, though damaged areas can not be replaced. Almost every case of mental disease begins with insomnia, and while this is not the cause of the disease, it retards repair, and until normal sleep is established, permanent results can not be obtained. With the elimination of the toxins by antiseptics, sleep usually comes without sedatives. Briggs believes that the treatment of selected cases of mental disturbance with antiseptics and correcting the habits of the various organs, proves that toxins do exist and are the most potent factors in many disorders of the brain.

St. Louis Medical Review.

April 28.

23 Pharmacology of Ions. (To be Continued). O. H. Brown, St. Louis.
24 Scopolamin-Morphin as an Adjuvant to General Anesthesia. V. Pleth, Crookston, Minn.

New York State Journal of Medicine, Brooklyn.

April.

25 *Resections of the Bladder in Rebellious Cystitis. H. A. Kelly, Baltimore.
26 *Exophthalmic Goiter. W. G. Thompson, New York.
27 *Immediate and Early Treatment of Ocular Injuries. A. A. Hubbell, Buffalo, N. Y.
28 Factors Which Further Convalescence Following Abdominal Section. F. H. Wiggin, New York.
29 Therapy of Carcinoma. S. Lloyd, New York.
30 Pathologic Clinical Consideration of Arteriosclerosis. J. M. Van Cott, Brooklyn.
31 Oration on Surgery. (Concluded.) R. Park, Buffalo, N. Y.
32 History of the Medical Society of the State of New York. (Continued). J. J. Walsh, New York.

25. **Resection of Bladder in Rebellious Cystitis.**—For the management of intractable cases Kelly lays down the following rules: First, to determine the infecting organism or organisms, note how numerous are the colonies which grow out within a given time from say three platinum loops distributed on agar. Second, note exactly the extent of the disease in the urinary tract as a whole, in kidneys, ureters and bladder. Third, it is important to determine and to make carefully written notes describing the exact condition of the bladder. Fourth, in beginning a course of treatment, clear up the disease as far as possible, according to the milder measures, thus rendering the active surgical intervention when undertaken far less aggressive. Fifth, having cleared up the disease to a particular area which is rebellious to further treatment, it should then be excised in toto by a resection of the bladder walls. Kelly urges that many cases of advanced vesical inflammation, even of a tuberculous character, which heretofore have been counted hopeless, are amenable to surgical treatment, which may go so far as to excise half or two-thirds of the bladder.

When the kidney is involved, this organ must be attended to first if the disease is extensive, after the bladder if the infection is mild. He thinks the best method of suturing is to use a row of catgut sutures, including the entire thickness of the bladder walls, for the first row, and to reinforce this with a second row of fine silk sutures. He has experienced no trouble from tying catgut sutures in the bladder, and dropping them when it was easier to pass and to tie the sutures in this way at the base.

26. **Exophthalmic Goiter.**—Thompson reports the results of a study of 42 cases. He emphasizes the fact that in addition to possessing the four cardinal symptoms of tachycardia, tremor, enlarged thyroid gland and exophthalmos, this disease is subject to exacerbations which are of a distinctly toxemic character, with active fever, acute cardiac dilatation with murmurs, and a variety of symptoms constituting a definite clinical syndrome. In some instances the most serious toxemic attacks have been completely checked by the cytotoxic serum of Dr. Rogers, prepared from the diseased human glands through animal inoculation. In a large proportion of cases the agency which appears to initiate the acute toxemic seizure, is some intercurrent mild infection, such as an attack of tonsillitis, pharyngitis, bronchitis, influenza or similar acute ailment.

27. **Treatment of Ocular Injuries.**—Hubbell claims that the experience of most ophthalmologists shows that practitioners who are first consulted in these injuries approach them with more or less unconcern, and fail to give the attention and relief demanded. On account of the complexity of the organ of vision, the difficulties of diagnosis, the importance of the results and the technicality of treatment in so many of these cases, Hubbell advises that they should be referred to a specialist as early as possible, and especially when there are penetrating wounds of the eyeball. Injuries of the eyelids and other ocular appendages seldom affect vision, infection rarely follows, wounds heal rapidly, and they are to be treated simply in accordance with the ordinary rules of surgery. This treatment may be carried out by any intelligent practitioner. Superficial injuries of the cornea are more important. Infection frequently takes place, and then there is danger of a suppurative process, which may extend throughout the cornea or even involve the whole eyeball. The early treatment consists in removing foreign bodies and using applications to prevent infection.

Penetrating wounds of the eyeball should always be approached with more or less concern. If not already infected at the time of the injury, they easily become infected afterward. Moreover, a foreign body may have been driven into the eye, which not only carries infection with it, but which in itself becomes, with rare exceptions, a certain cause of destructive inflammation. In every punctured wound of the eyeball inflicted by a small, unseen object, there should always be a suspicion of the introduction of a foreign body. The diagnosis is often most difficult, and requires special appliances and experience. The removal of a foreign body from the interior of the eye is almost imperative to its salvation. Here, too, special equipment and special skill are demanded. Infection, by whatever means it may be introduced, is the agent which destroys the injured eye, both by suppurative processes and by non-suppurative uveitis. In non-suppurative traumatic uveitis, the infection seems to be of a specific kind and is transmissible to the uninjured eye, producing there a sympathetic uveitis, which is also destructive in its course. Sympathetic inflammation does not develop until at least two weeks after the injury of the first eye.

In the absence of a foreign body, or after its removal, the

immediate treatment of a perforating wound consists in sterilizing the eye and its surroundings, freeing the wound of all incarcerated tissues and closing it as perfectly as possible, or touching the opening with carbolic acid. Subsequently sterilization should be kept up as effectually as the circumstances will permit. Infection should be combated by intraocular disinfectants and rendered dormant by the persistent and methodical application of cold over the eye. An eye that is hopelessly lost at the time of the injury should at once be excised, an operation which may be performed by any well-informed practitioner. When an eye is affected with active traumatic uveitis, it should be enucleated within two weeks from the time of the injury, unless the eye has useful vision or many may be given useful vision by some operative measures. In wounds of the eyeball of all varieties delays are dangerous, and if there is the slightest possibility of a foreign body being lodged within the eye, or if infective processes begin, the dangers to sight are so great that the services of a specialist should always be secured, if possible.

Journal of the Medical Society of New Jersey, Newark.

May.

33 Possible Dangers of Water Gas. W. S. Disbrow, Newark.
34 *Effects of Muscular Exercise on the Heart. G. L. Meylan, New York.
35 Some Points in Infant Feeding. A. Hand, Jr., Philadelphia.
36 Syphilitic Affections of the Eye. A. Cramer, Camden, N. J.
37 Practical Application of Disinfectants. R. J. Wilson, New York.
38 *Proprietary Medicines and State Medical Society Journals. R. C. Newton, Montclair, N. J.

34. Effect of Muscular Exercise on the Heart.—Meylan claims that muscular exercise judiciously prescribed and practiced is a valuable agent in the cure of many forms of cardiac inefficiency. Athletic sports when practiced without medical supervision produce more or less permanent cardiac injuries in weak and untrained individuals. The difference in pulse between the horizontal and the vertical position is a useful sign in the physical diagnosis of cardiac conditions. The adaptability of the heart to suddenly increased work, as measured by the change in pulse rate after muscular exercise, is a valuable indication of cardiac efficiency.

38. Proprietary Medicines and State Journals.—Newton says that only the journals really owned and controlled by the state societies are independent enough, honest enough and brave enough to attack this evil of the advertisement of nostrums in the medical press and to keep up the fight. When the medical press has cleared its own skirts it can and will force the lay press and the religious press to follow suit. The average of intelligence both in and out of the profession is gradually rising. It has at last risen to the point where this question is understood in its true bearings. The fact that the majority of the privately owned medical journals are controlled by the nostrum interests, he states, is apparent to everyone, and although the fight may be a long and a hard one, honesty and decency in the medical press will assuredly be exacted at last by the profession. Newton claims that the credit for the inauguration and prosecution of this beneficent work belongs to the state medical journals.

St. Paul Medical Journal.

May.

39 *Dilatation of the Stomach. G. D. Head, Minneapolis.
40 *Relation of Dislocated Kidney to Disease of the Vermiform Appendix. H. J. O'Brien, St. Paul.
41 Preparation and After-Treatment of Operative Cases. A. A. Matthews, Spokane, Wash.
42 Feces a Secretion as Well as an Excretion. A. C. Peterson, Dassell, Minn.
43 *Diagnostic Significance of Albumin and Casts in the Urine. T. W. Stumm, St. Paul.
44 Significance of Casts and Albumin in Urine, with Special Reference to Its Pathology. F. C. Schuldt, St. Paul.
45 *Significance of Albumin and Casts in the Urine of Infants. W. R. Ramsey, St. Paul.
46 *Significance of Albumin and Casts in Pregnancy. A. R. Hall, St. Paul.
47 Diagnostic Value of Albumin and Casts in Urine as Related to Life Insurance. C. N. McCloud, St. Paul.

39. Dilatation of Stomach.—An examination of 37 cases has convinced Head that no one etiologic factor lies at the bottom of all cases of dilated stomach, and the cases seem naturally to divide themselves into groups depending on the factor which played the most prominent part in producing the dilatation. In 5 of the cases, ulcer either of the stomach or duodenum, with resulting stenosis at the pyloric end of the stomach, was the cause of the dilatation. Three of these cases were in men and two in women. All were in individuals over 30 years of age. All had complained of stomach trouble for many years; one patient 20 years, another 10 years, a third 25 years and a fourth 6 years. All complained of vomiting after meals and of pain after eating. In 2 the stomach was much enlarged, the lower border reaching in one case to 10 cm. below the umbilicus; in another to 12 cm. below the umbilicus. In the other two the lower border reached to the umbilicus. In 4 cases of the 37 the cause of the dilatation was a carcinoma of the stomach. Three were in men and one in a woman. In another group of cases, five in number, the etiologic factor was a lesion in or around the gall bladder.

In two of the cases the enlargement was caused by an obstruction at the pylorus due to adhesions between the gall bladder and the duodenum or pyloric end of the stomach. In one case of this group the dilated stomach was caused by a distended gall bladder filled with gallstones which, lying over the duodenum, acted as an obstruction to the outflow of chyme. In all the cases of this group the lower border of the dilated stomach reached below the umbilicus. In all the abdominal pain was referred to the upper abdomen in the pyloric region of the stomach. In all there was epigastric tenderness of mild degree and not well localized. In two of the cases the abdominal distress complained of came at regular intervals after eating. In the other three the pain came irrespective of the taking of food. None complained of vomiting. In four there were large amounts of free HCl in the gastric contents after a test meal. A stomach analysis in the fifth case was not made. In two there was marked hyperacidity after a test meal.

In a fourth group of cases, three in number, the dilatation of the stomach was associated with tuberculosis of the lungs. One case was in a man 41 years, the other two in women, 28 and 55 years of age, respectively. In a fifth group of cases, 14 in number, the enlarged stomach was associated with pronounced nervous symptoms and assumed a position low in the abdomen. In most of them the abdominal wall was loose and flabby, one or both kidneys were out of position and could be palpated, as could also, in some cases, the edge of the liver and spleen. The abdominal aorta pulsated forcibly. The remaining cases, four in number, are classed together as the mucus colitis group. These were cases of dilated stomach associated with the passage of masses of mucus in the stools, the passages usually being accompanied by attacks of colicky pains in the abdomen. Two of these cases were in women and two in men. All were young individuals under 25 years and all had moderately dilated stomachs.

40. Relation of Dislocated Kidney to the Appendix.—O'Brien believes that one of the great reasons why many cases of nephrorrhaphy are not attended with relief of the symptoms is because an accompanying appendicitis is overlooked. He insists on the necessity of the removal of the appendix in all cases in which a right nephrorrhaphy is undertaken for the relief of abdominal symptoms.

43. Significance of Albumin and Casts in Urine.—Stumm points out that there are instances in which the presence of albumin and casts in the urine have no grave diagnostic significance. He urges, however, that if they are found present the patient should be observed closely and the diagnosis of physiologic albuminuria made with great caution, for once it is impressed on the mind of the patient that the presence of albumin in his urine is of no grave significance he may lead a life that will be of the greatest detriment to him if the physician has erred in his diagnosis.

45. Albumin and Casts in Urine of Infants.—Ramsay has found that when systematic examination of the urine of infants is made, albumin and casts are found frequently, especially when the infant is suffering from disturbances of the intestinal tract.

46. Albumin and Casts in Pregnancy.—Hall points out that albumin and casts occur in a large percentage of pregnant women and that in most cases it signifies the presence of the

so-called kidney of pregnancy. Most of these cases return to an apparently normal condition after labor, but the presence of pregnancy indicates a danger of eclampsia. About 2 per cent. of these women develop eclampsia, and eclampsia never develops except in these cases.

Albany Medical Annals.

May.

48 *Uterine Myomata Simulating Pregnancy; with Special Reference to the Submucous Variety. J. A. Sampson, Albany.
49 Methods and Indications for the Use of Spinal Anesthesia. A. W. Elting, Albany.
50 Treatment of Acute and Chronic Maxillary Sinusitis. C. F. Theisen, Albany.

48. **Uterine Myomata Simulating Pregnancy.**—Sampson calls attention to some of the more common conditions causing difficulties in the differential diagnosis, and also emphasizes the important part played by uterine myomata in the simulation of pregnancy, and, therefore, the importance of carefully studying these cases. Uterine myomata through the alterations in the form of the uterus caused by the tumor, the increased vascularity in that organ and surrounding parts necessary to nourish the uterus and tumor, and the stimulus due to a submucous myoma, thus giving rise to uterine contractions, may cause symptoms which may simulate any or all of those caused by pregnancy, except the actual heart-beat of the living child. These simulations, however, nearly always lack the stamp of genuineness, and, if they alone are carefully studied, should teach that they are, in the particular case under study, much more characteristic of a myomatous uterus than a pregnancy; the above, together with a history of the case, should make the diagnosis clear in nearly every instance. Sampson concludes that when mistakes are made it is nearly always the physician's fault; the signs were all there, only he would not see or heed them, or would insist in incorrectly interpreting them.

Journal of the Association of Military Surgeons of the United States, Carlisle, Pa.

May.

51 Consideration of the Gunshot Wounds Inflicted with the Japanese Small Caliber Mantle Bullet. R. R. de Wreden, St. Petersburg, Russia.
52 *Medical and Surgical Observations During a Three Years' Tour of Duty in the Philippines. J. M. Banister, Ft. Riley, Kansas.
53 *Disability from Hernia in Men Engaged in the Marine Services; the Operation for the Radical Cure. H. W. Austin, U. S. P. H. and M.-H. S.
54 Military Headgear and Its Relation to the Health of the Soldier. H. D. Corbusier, U. S. A.
55 James Markham Marshall Ambler. J. C. Wise, U. S. N.

52. **Observations in the Philippines.**—The remarks on surgery in the Philippines made by Banister are founded on his experiences in the surgical department of the First Reserve Hospital, Manila, during a period of twenty-three and one-half months. Of 775 operations noted by Banister, 181 involved the peritoneal cavity, and 240, counting four cataract extractions, may be easily accounted major operations. Following this amount of operative work there occurred 16 deaths, a mortality rate of 2.06 per cent. Most of these 16 fatalities occurred in patients who were moribund when brought to the hospital, and who were subjected to immediate operation in the forlorn hope of saving life, and the remainder were in hopeless conditions when placed on the operating table, with one exception, and in the latter case death from tetanus was due to infection from dust blown into the operating room during the operation. In this mortality list there is not a death, Banister says, which would not have occurred under the best auspices in any climate, except the fatality from tetanus. The soil of the Philippines is rich in tetanus spores.

For the radical cure of inguinal hernia by the Bassini method 96 operations were performed, there having been first union in every case, and not a single instance of recurrence. Fifty-five operations for appendicitis were performed, with one death. These operations were undertaken for every variety of disease and there was no selection of favorable cases for operation. Eight operations for liver abscess were performed on seven patients, one patient having been aspirated prior to a subsequent operation by abdominal section. These cases of hepatic involvement occurred in patients who had been affected with amebiasis, and were directly due to amebic invasion of the liver. Three deaths occurred; two of these patients had multilocular abscesses and one a large single abscess. Banister says that bone surgery is followed by excellent results in the Philippines, and no one need hesitate to operate on joints, or the osseous tissues generally, on account of any supposed detrimental climatic influence. For the radical cure of ventral hernia five operations were performed. Of these, four patients were radically cured, the wounds healing by first union, and one fatality resulted from tetanus, as before described.

A perfect result followed every operation for varicocele and hydrocele, of which there were 69 for the former and 16 for the latter condition. The suprapubic incision was invariably used in the operation for varicocele, and the excision of the tunica vaginalis, with drainage, was employed in the radical treatment of hydrocele. Seven perineal sections were performed, four with and three without a guide. All were successful. In the case of a patient with extensive adhesions of the cecum and omentum to the parietal peritoneum, which condition had existed for two years as the result of an old suppurative appendicitis which had been subjected to operation with drainage, the patient being an invalid in consequence, a perfect cure was secured by laparotomy with separation of the adhesions, a portion of the omentum being removed.

53. **Hernia in the Services.**—Austin believes that all adults under 55 years of age whose vocation necessitates severe physical exertion, as that of the sailor or the soldier, suffering from inguinal hernia are best treated by an operation for the radical cure, such as the Bassini or Halsted, and that it should be recommended in all such cases, unless there is some special contraindication that would prevent the patient undergoing any surgical operation requiring an anesthetic. Each case of irreducible hernia is a law unto itself, but if the hernia is not very large, and if the patient is in fair health, not over 60 years old, and especially if the bowel comes down at times, Austin recommends an operation. The liability to strangulation in these cases is greater than in any other except in enterocele, in which the opening in the ring is very small. Immediate operation in all strangulated hernia without temporizing is the safest procedure, and the operation should be for radical cure when possible.

New Orleans Medical and Surgical Journal.

April.

56 Case of Black-Water Fever. E. D. Newell, St. Joseph.
57 The Doctor's Salary. E. D. Newell, St. Joseph.
58 New Method of Treating Swamp Fever. E. D. Newell, St. Joseph.
59 Treatment of Complete Prolapse of the Rectum by Rectopexy. S. P. Delaup, New Orleans.
60 Bites of Insects. L. Dyer, New Orleans.
61 Abscess of the Liver. L. Sexton, New Orleans.
62 The Insanity of Epilepsy. D. E. M. Hummel, Jackson.
63 Hemostatics. P. A. Boykin, Jeanerette.

May.

64 The Third Stage of Labor. E. S. Matthews, Bunkie, La.
65 Impotency in the Male. C. W. Allen, New Orleans.
66 Case of Tetanus Treated by the Intraspinal Injection of Twenty-five Per Cent. Solution of Magnesium Sulphate. S. Logan, New Orleans.

Medicine, Detroit, Mich.

April.

67 Observations on the Phagocytic Power of the Blood of Supposedly Normal Human Beings. J. McFarland and E. M. L'Engle, Philadelphia.
68 *African Poison Test as Observed in the Portuguese Colony of Angola, West Africa. F. C. Wellman.
69 Eyes and Ears of School Children. F. Allport, Chicago.
70 Laws and Teachings of the Ancient Hindus in the Art of Love. W. L. Howard, Baltimore.
71 Is Jugulation of Acute Disease Possible? W. C. Abbott, Chicago.
72 Pneumococcic Infection in Relation to Hemorrhage in Tuberculosis. L. F. Flick, Philadelphia.
73 Sudden Epilepsy and Epileptic Self-Inflicted Injuries. W. F. Howat, Hammond, Ind.

68.—See abstract in THE JOURNAL, Dec. 23, 1905, page 1979.

Albany Medical Annals.

April.

74 Points in the Diagnosis and Treatment of Pulmonary Tuberculosis. L. Brown, Saranac Lake.
75 History of the Medical Society of the County of Rensselaer, New York. R. B. Bontecue, Troy.
76 *The Flat-foot Series of Disabilities and Deformities of the Foot. J. M. Berry, Troy, N. Y.

76.—See editorial in THE JOURNAL, April 28, 1906, page 1290.

Journal of the Minnesota State Medical Association or Northwestern Lancet, Minneapolis.

April 1.

77 Present Prostatic Surgery. J. W. Little, Minneapolis.
78 Practical Utility of Cystoscopy. M. C. Millet, Rochester, Minn.
79 Intestinal Perforation in Typhoid Fever. W. Courtney, Brainerd.

Bulletin of the Johns Hopkins Hospital, Baltimore.

April.

80 Some Recent Text-books of Anatomy, with Special Reference to the New American Edition of Gray. F. P. Mall, Baltimore.
81 Variation in the Soleus and Plantaris Muscles. D. H. Du-Pree, Baltimore.
82 The Pancreatic Ducts in the Cat. G. J. Heuer, Baltimore.
83 Schultze Clearing Method as Used in the Anatomic Laboratory of the Johns Hopkins University. E. C. Hill, Baltimore.
84 Embryonic Development of a Case of Fused Kidneys. E. C. Hill, Baltimore.
85 Review of Some Recent Work on the Musculature of the Heart. W. A. Baetjar, Baltimore.

Journal Missouri State Medical Association, St. Louis.

April.

86 An Historical Sketch of the Movement to Establish a State Sanatorium in Missouri for Persons Having Incipient Tuberculosis. G. Homan, St. Louis.
87 Ocular Manifestations of Syphilis. C. Barck, St. Louis.
88 Are We Not Conservative in Removing Bony Structure in the Foot to Favor Drainage in Septic Infection. J. F. Menestrina, St. Louis.
89 Duties of the Practicing Physician to the General Public, in Infectious Diseases. A. S. Bleyer, St. Louis.
90 Obligations of the Practicing Physician to His Patient and the Patient's Family in Infectious Diseases. C. H. Powell, St. Louis.
91 Municipal Control of Infectious Diseases. C. A. Snodgrass, St. Louis.
92 Duties of the Board of Education in the Control of Infectious Diseases. W. G. Moore, St. Louis.

Journal of the Medical Society of New Jersey, Newark.

April.

93 Alcoholic Psychoses. F. C. Horsford, Morris Plains, N. J.
94 Uncinariasis. J. H. Harris, San Juan, Porto Rico.
95 Acute Articular Rheumatism. M. J. Synnott, Montclair.

Journal of the Mississippi State Medical Association, Vicksburg.

April.

96 A Few Facts About Hydrotherapy. W. D. Beacham, Felder.
97 Cacodylic Acid—Its Use in Remittent Fever and Allied Conditions. M. F. Wilson, Sardis.
98 Valentine's Apparatus Modified to Suit My Convenience. R. M. Donald, Inverness.
99 Malaria: Fever. H. C. Duck, Friars Point.

Texas State Journal of Medicine, Fort Worth.

April.

100 Medicolegal Aspects of Traumatic Ulcers of the Cornea. J. H. Bell, San Antonio.
101 Considerations in Curettage of the Uterus. W. F. West, Waxahachie.
102 Encroachment of the Surgeon on the Field of Internal Medicine. E. Lanphear, St. Louis.
103 Removal of the Uterus, Ovaries and Tubes for Epilepsy. C. E. Cantrell, Greenville.
104 The Insanity of Adolescence. R. B. Sellers, Comanche.
105 Education of Employés in First Aid to the Injured. W. H. Blythe, Mt. Pleasant.
106 Case of Galloping Consumption. W. Shropshire, Yoakum.
107 Rupture of the Uterus. W. A. Bedford, Franklin.
108 A Method of Abdominal Palpation. A. E. Thayer, Galveston.
109 Gonorrheal Affections in Gynecologic Work. C. R. Johnson, Gainesville.
110 Psychology as a Therapeutic Agent. J. T. Benbrook, Rockwall.
111 Typhoid Perforation of the Bowel with Obstruction—A Plea for Exploratory Abdominal Incisions. A. E. Spohn, Corpus Christi.
112 Uterine Retrodisplacements. J. S. McCelvey, Temple.

Journal of the Kansas Medical Society, Lawrence.

April.

113 Typhoid Fever. X. Olsen, Clay Center.
114 Id. J. H. Green, Galena.
115 Electrolytic Dissociation; Ion Action of Chemic Salts. B. D. Eastman, Topeka.

Indiana Medical Journal, Indianapolis.

April.

116 Gonococcic Infections and the Physician's Responsibility. J. B. Clark, New York.
117 Lupus Vulgaris. C. J. White, Boston.
118 Simple Fractures of the Shaft of the Femur. H. C. Robinson, Martinsville, Ind.

Oklahoma Medical News-Journal, Oklahoma City.

April.

119 The Best Method of Anesthesia. J. A. Matlock, Bee, Wash.
120 Accuracy in Diagnosis. R. V. Pearce, Howard, Kansas.
121 A Question of Dosage. J. R. Landers, Bernadotte, Ill.

St. Paul Medical Journal.

April.

122 Harvard Medical University. T. F. Harrington, Lowell.
123 Cancer of the Rectum. W. J. Mayo, Rochester, Minn.
124 Indications for the So-called Radical Mastoid Operation. F. Allport, Chicago.
125 Macroscopic, Microscopic and Radiographic Evidences of Bone Sarcoma. A. R. Colvin, St. Paul.

FOREIGN.

Titles marked with an asterisk (*) are abstracted below. Clinical lectures, single case reports and trials of new drugs and artificial foods are omitted unless of exceptional general interest.

British Medical Journal.

April 21.

1 *Enuresis and Its Treatment. H. Thursfield.
2 Causes and Treatment of Enuresis. P. G. Lewis.
3 *Properties of an Antityphoid Serum Obtained from the Goat. A. MacFadyen.
4 Bacteriology of the Summer Diarrhea of Infants. H. de R. Morgan.
5 Influence of Increased Barometric Pressure on Man. M. Greenwood.
6 *Case of Exophthalmic Goiter. H. T. Dufton.
7 Widespread Motor Paralysis Due to Multiple Symmetrical Peripheral Neuritis. F. W. Price.
8 Pneumococcic Arthritis. W. B. Secretan, and W. Wrangham.
9 Vasodilatation in Hemoptysis. E. T. Smith.
10 Mycetoma (Madura foot) in the Yemen. F. G. Clemow.

1. **Treatment of Enuresis.**—Atropin, used in the form of an extract, or the tincture, or as liquor atropinæ, is the only drug from which Thursfield has derived any good results in the treatment of enuresis. He usually gives 10 minims of the tincture three times a day as the initial dose, and raises the dose week by week up to a dram three times a day. He says it is essential that the dose should be sufficient to produce evidence of its action, and that it be used over a long period. The dose should be diminished slowly until the drug can be dispensed with safety. A period of from three to six months will usually be required to obtain permanent relief. Thursfield employs the belladonna in conjunction with potassium citrate in the majority of cases, and in a few instances, in which he believed that hyperacidity of the urine was the chief cause, he found potassium citrate alone to be efficacious. Another drug which he has found useful, especially in cases of bacteriuria is urotropin (hexamethylenamin, U. S. P.). He says it must be given well diluted. He has used it in a series of thirty consecutive cases with good results in nine instances.

3. **Antityphoid Serum.**—MacFadyen gives an account of the results obtained by the immunization of the goat with the cell juices of the *Bacillus typhosus*. Virulent typhoid bacilli isolated directly from the peritoneal cavity of the guinea-pig were cultivated on nutrient agar in Roux bottles for eighteen hours at blood heat. The growth was brushed off and washed with distilled water in a centrifuge for half an hour. The living bacilli were then triturated at the temperature of liquid air in the author's grinding pot. The time allowed was thirty minutes per gram of bacilli. The resultant mass was taken up in 1 in 1,000 solution of caustic potash and spun for two hours. The fluid obtained represented a 10 per cent. extract of the typhoid cell plasma, along with such bacilli as had not been removed by the two hours' centrifugalization. This was treated with chloroform vapor for half an hour. The cell juices obtained under these conditions were sterile and toxic on intravenous injection into the test animals employed—goats and rabbits.

A goat after receiving doses of 0.05 and 0.1 c.c. died, whilst another after the injection of 0.05, 0.1, 0.5 and 1 c.c., died within four hours after the last dose. The subsequent animals consequently received small sublethal doses which were raised very gradually at duly spaced intervals. One injection weekly proved to be the safest procedure, and the same dose was repeated until it failed to produce any toxic action on the animal. A slightly higher dose was then given and repeated in the same manner. This method proved ultimately successful, as only in this way was tolerance established to otherwise fatal doses of the typhoid endotoxin.

6. **Exophthalmic Goiter.**—Dufton suggests that the hypertrophy and overactivity of the thyroid, the exophthalmos, the persistent thymus, the enlarged lymph glands, the increased connective tissue in the neck, the tachycardia, palpitation and tremor, besides the other subjective symptoms of the disease

are symptoms of a lesion of some of the chain of sympathetic ganglia. He sees no reason why ordinary simple goiter and the exophthalmic form should not be varieties of the same disease.

The Lancet, London.

April 21.

11 *The Arterial Pulse; Its Physiology and Pathology. S. W. Curl.
12 The Acute Abdomen. W. H. Battle.
13 *Vaccine Treatment in Surgery. H. M. W. Gray.
14 *Treatment of Malignant Endocarditis by Rectal Administration of Antistreptococcic Serum. N. Raw.
15 Training of Nerve Centers in Children. G. E. C. Pritchard.
16 Case of Ascites Tapped Sixty-nine Times. F. H. Maberly.
17 *New Method of Operating in Pannus. W. Primrose.

11. **The Arterial Pulse.**—According to Curl the arterial pulse represents in the main the sudden increase of pressure occurring in the arteries as a result of the ejection into them of the contents of the left ventricle, and it travels from the heart to the peripheral parts in the form of a wave, diminishing in size as it passes along. The pulse curve represents the changes occurring within the artery at the part under examination. Its form varies according to the force of the contraction of the ventricle, to the blood pressure, to the condition of the vessel wall, and to the distance of the vessel from the heart. This sudden increase of pressure in the arteries having reached its maximum is followed by a fall, the fall, however, being interrupted by a slight increase of pressure as the dicrotic wave appears; it then returns to the normal.

Of pathologic pulses he found few, if any, characteristic of the diseases producing them; in the large majority of cases no specific alterations are produced. Alterations in the tension occur in arteries which are either naturally small or are so abnormally retracted that one is apt to overlook high tension, and he thinks that in such cases as these the sphygmograph is especially useful, since it may demonstrate high tension hardly appreciable to the finger.

13. **Vaccine Treatment in Surgery.**—Gray has employed the vaccine treatment, according to the method advocated by A. E. Wright, with excellent results in the treatment of tuberculous glands, tuberculous joint affections, tuberculous peritonitis, psoas abscess, genitourinary tuberculosis, tuberculous disease of the upper air passages, and tuberculous tenosynovitis.

14. **Antistreptococcic Serum in Malignant Endocarditis.**—From a prolonged use of polyvalent antistreptococcic serum per rectum, Raw is satisfied of its greater efficacy and personal comfort than by injecting it under the skin. He reports three cases of malignant endocarditis in which this treatment was of immense benefit when other methods had failed. During the past eight years Raw has used this serum in more than 200 cases of septic infection of various kinds, such as puerperal septicemia, pyemia, erysipelas, and septicemia complicating typhoid, pneumonia and endocarditis, and he has come to the conclusion that in purely streptococcal infections the serum is of great value, especially when administered by rectum.

The method adopted is as follows: The bowels are freely cleared by aperients and the rectum is gently washed out with a little warm saline solution. The formula for injection is as follows: antistreptococcic serum, 20 c.c.; normal saline solution, 100 F., 40 c.c.; to be gently injected into the rectum morning and evening, or as required. It is found that there is no pain nor discomfort; the serum is rapidly absorbed and seems to exert the same bactericidal influence as when given under the skin; skin rashes are rarely seen and the thirst and dry tongue are relieved. When given in such a small amount there is no difficulty on the part of the patient retaining it and it is rapidly absorbed.

17. **New Operation for Pannus.**—The operation described by Primrose consists in causing an extravasation of blood into the subconjunctival tissue around the cornea. This by its mechanical pressure and by acting as an irritant foreign body setting up a localized inflammation, causes the obliteration of the vessels which vascularize the cornea. The only instrument required is a small sharp-pointed knife—a Beer's cataract knife does very well for the purpose. The point of the knife is passed through the conjunctiva at a distance of 2 to 3 mm. from the cornea and made to puncture one of the larger blood vessels. The knife is then withdrawn. The conjunctival wound should be as small as possible and made obliquely by holding the knife at an acute angle with that part of the surface of the eyeball which is being operated on. In this way there is no external hemorrhage; but bleeding takes place into the subconjunctival tissues and is arrested automatically by the pressure of the extravasated blood on the blood vessel walls. In like manner, many of the smaller vessels in the vicinity are mechanically closed. The mechanical action is increased by the formation of a coagulum, the fibrinous part of which shrinks and makes the whole mass smaller. By the time the blood clot has disappeared, the blood vessels in the cornea affected by the operation have shriveled up and the cornea has regained much of its transparency. The whole pannus may be treated in this way at one time, or the operation may be repeated from time to time, only a part of the pannus being treated each time. The latter is always advisable when the pannus is marked, as the inflammatory reaction is sometimes very severe and accompanied by a good deal of pain. Although the structures in the anterior part of the eyeball are all more or less affected by the inflammation this is easily controlled and subsides in a few days with the application of suitable remedies.

Journal of Tropical Medicine, London.

April 16.

18 An Insect Enemy of the Disseminator of Human Tick Fever in Angola. E. E. Austen.
19 *Suggestions for the Maintenance of Health by Women in the Mission Field. M. A. D. Scharlieb.
20 Some Striking Facts About Bangkok. R. H. Bremridge.

19. **Maintenance of Health by Women in Mission Field.**—Scharlieb discusses this subject under the following heads: 1, Preparation for work in the mission field; 2, selection of candidates; 3, allocation of candidates for special work; 4, care of health on active duty, and 5, care of health when on furlough. She advises that in the case of young women proposing to go out as the wives of missionaries there should be a special investigation as to their fitness for maternity. The external measurements of the pelvis should be carefully taken with calipers, and, if any obvious deformity exists, a further examination under anesthesia may sometimes be proposed: loss of valuable lives and much hindrance to work being saved if it is clearly understood that in any given case the wife of a missionary is likely to need specially skilled assistance, and must, therefore, go for confinement to some center where such assistance can be secured. The paper contains many excellent suggestions, but space does not permit of a full abstract.

Indian Medical Gazette, Calcutta.

April.

21 Extraction of Cataract in the Capsule. H. Smith.
22 Intracapsular Irrigation in Cataract Extraction. W. J. Wanless.
23 Insanity, with Illustrative Cases. C. J. Robertson-Milne.
24 Prevalence of Hill Diarrhea in Maymyo. C. C. Barry.

Bulletin de l'Académie de Médecine, Paris.

25 (Year LXX, Nos. 13-14.) *Maladies endémiques, epidémiques et contagieuses qui ont régné dans les colonies françaises en 1904. Kermorgant.
26 *Des verres jaunes dans l'hyperesthésie rétinienne. Leurs indications cliniques. (Yellow glasses in ophthalmology.) Motais.
27 End of Discussion on Statistics and Prophylaxis of Tuberculosis.
28 *6 cas d'inversion utérine traitée avec succès par l'application du ballon de M. Champetier de Ribes, gonflé avec de l'air. P. Mantel and Pinard.
29 *De la décapsulation rénale et de la néphrotomie dans le traitement des formes graves de l'eclampsie. Chambrelent, Pousson and Pinard.

25. **Morbidity in French Colonies.**—Kermorgant's official report states that sleeping sickness was noted in all the French colonies in western Africa during 1904, and has depopulated entire villages in the Congo region. Plague was observed only in the Indian possessions, but malaria prevails in nearly all the colonies; it is most serious in Madagascar and Tonquin. It averages about 56 per cent. of the total mortality among the Europeans there. In the Soudan it is endemic throughout the year. All the children, the report states, have enlarged spleens, and the malarial parasite is found in the blood of nine out of every ten children.

26. **Yellow Glasses for Sensitive Eyes.**—Motais has been prescribing for fifteen years, in cases of ultra-sensitiveness to light, glasses of a yellowish tint, slightly orange, with a

brownish tint on reflection. They increase the perception of light while soothing the eyes. The yellow tint evidently prevents the passage of the chemical rays to some extent. These yellow glasses, he states, will be found far superior to smoked or blue glasses, while they do not impair the vision. When they are taken off even the most brilliant sunlight seems dead and lifeless in comparison.

28. **Inversion of Uterus Reduced with Champetier de Ribes Balloon.**—Mantel has had the unusual experience of 6 cases of complete inversion of the uterus which he was able to reduce with the aid of the inflated bag. In his latest case the inversion occurred during delivery and was easily reduced. Four days later it recurred and reduction then did not seem practicable. After thorough cleansing of vagina and uterus with hydrogen dioxid he introduced the Champetier de Ribes balloon into the vagina and inflated it with air, leaving it in place for twenty-four hours, when conditions were found restored to normal. The balloon was left as a precautionary measure for a week, and no further disturbances occurred.

29. **Decapsulation of Kidneys Plus Nephrotomy in Eclampsia.**—In a case of severe eclampsia, with anuria for forty-eight hours, the kidneys were decapsulated according to Edebohl's technic. Macroscopic and microscopic evidences of acute parenchymatous nephritis were found, and the decapsulation was supplemented by nephrotomy of the right kidney. The nephritic process was manifestly arrested by these measures, and the secretory functions were restored at once. The patient was a primipara of 21. In commenting on this and on Edebohl's cases, Pinard says that many women who die after having presented eclamptic attacks never exhibit anuria, and their kidneys show few if any signs of anything pathologic. In certain cases of eclampsia, however, the symptoms point to a condition which might be called "glaucoma of the kidney." Surgical intervention on the kidneys should be restricted to such cases.

Semaine Médicale, Paris.

30 (XXVI, No. 14.) Les troubles de la sensibilité objective dans la paraplégie spasmodique syphilitique. Noica and S. Marbé.
31 (No. 15.) Le traitement de la tuberculose pulmonaire par le pneumothorax artificiel.
32 (No. 16.) *Etude de l'histologie et de la pathogénie du tabes. G. Marinesco (Bucharest).
33 *Méthode très simple pour dépister la stomatite menaçante, l'intolerance ou la saturation médicamenteuse dans une cure mercurielle. J. Severino (Treviglio).

32. **Pathogenesis of Tabes.**—Marinesco was unable to find the treponema in any of the numerous cases of tabes examined, the findings in the cerebrospinal fluid and in the sections of the spinal cord and posterior roots being invariably negative. In this profusely illustrated article he describes the results of his study of these parts in tabetics with the Cajal staining technic. He found that the nerve elements showed evidences of injury and also of attempts at regeneration. The tabetic lesions are twofold, a degenerative atrophy proceeding from the spinal cord toward the spinal ganglia, and a process of regeneration working in the opposite direction. The latter resembles the regeneration which occurs after section of a nerve. The absence of the treponema in the tabetic lesions and the occasional coexistence of syphilids on the skin or of other manifestations of syphilis with the tabes sustains the hypothesis that tabes is not due directly to the agent of syphilis, but is the result of toxins generated by it.

33. **Simple Test for Impending Mercurial Intoxication.**—Severino has found that existing or impending mercurial saturation can be revealed by touching one or more of the teeth with fresh tincture of iodin. As the patient then wets the teeth with saliva, they turn pink in case of intolerance or saturation, while this does not occur when the mercurial treatment is being well tolerated. The mercury eliminated in the saliva combines with the iodin to form the red bi-iodid if the proportion in the saliva is excessive. The proportion eliminated in the saliva is minimal when the kidneys and other emunctories are working properly, and the test gives negative findings, but when the mercury is accumulating unduly in the system this is revealed by the pink stain of the teeth after they have been touched with iodin.

Archiv f. klinische Chirurgie, Berlin.

Last indexed, page 1482.

34 (LXXVIII, No. 3.) Die Epityphlitis in Wechselbeziehung zu ihren bakteriellen Erregern (appendicitis in mutual relations to its bacterial agents). E. Haim.
35 Experimentelle Unterbindung der Leber-Arterie (of liver). H. Haberer.
36 Ein neuer operativ behandelter Fall von intermittierender cystischer Dilatation des vesicalen Ureter-Endes. C. Adrian.
37 *Ueber Thymus-Exstirpation bei Asthma thymicum. O. Ehrhardt.
38 Gastroenterostomie oder Resection bei Ulcus callosum ventriculi. A. Brenner.
39 *Ueber die Moglichkeit, der Niere einen neuen collateralen Blutzufluss zu schaffen (possibility of supplying kidney with new collateral blood supply). E. Martini (Turin).
40 Microscopic Study of Tumors Treated at Berlin Polyclinic.—Bericht über die vom 1 April, 1903, bis 1 September, 1904, in der Poliklinik der K. U.-Klinik zu Berlin behandelten Geschwülste. H. Coenen.
41 Ueber den Werth der Blut-Kryoskopie für die Nieren-Chirurgie (value of cryoscopy of blood in surgery of the kidneys). A. Kock.

37. **Removal of Thymus to Relieve Asthma.**—Ehrhardt removed the enlarged thymus in a girl of 2 whose trachea was flattened by the thymus. The organ was easily removed, freeing the child at once from her suffocation. He felt justified in removing the thymus, as experimental research has shown that dogs tolerate its removal without disturbances. The child has not apparently suffered any inconveniences from the operation and has been entirely well since; the blood findings are entirely normal. The operation was performed last September. He left the incision open to see whether or not the flattened trachea would resume its normal shape, as it soon did spontaneously. The diagnosis of compression of the trachea was rendered certain by the findings when intubation was attempted.

39. **Possibility of Supplying New Collateral Circulation for the Kidney.**—Martini's numerous experiments on dogs treated by decapsulation of the kidney demonstrate anew that the circulation through the kidney becomes much more extensive after collateral circulation has developed in consequence of the decapsulation. He found that it was possible for dogs to survive after nephrectomy and ligation of the vein of the remaining kidney when the collateral circulation had developed after its decapsulation. This condition was always fatal for dogs with normal, that is, undecapsulated kidneys. The development of new anastomotic routes after decapsulation was unmistakably shown by the passage of gelatin into the kidney through the circulation after all the normal vessels of the kidney hilus had been tied off.

Centralblatt f. Chirurgie, Leipsic.

Last indexed, page 1062.

42 (XXXIII, No. 10.) *Treatment of Acute Suppurative Affections with Passive Congestion.—Zur Behandlung der akuten eitrigen Entzündungen mit Stauungshyperämie nach Bier. N. Kaefer (Odessa).
43 (No. 11.) Der kleine Bauchschnitt als Methode für die Appendix-Extirpation (small incision). von Eiselsberg.
44 *Zur Operationstischfrage (best operating table). F. de Quervain (Chaux-de-Fonds).
45 (No. 12.) *Treatment of Fractures with Passive Congestion.—Die Behandlung der Knochenbrüche mit Stauungshyperämie. C. Deutschlaender (Hamburg).
46 (No. 13.) *First Aid Dressings and Arrest of Bacteria.—Der erste Verband auf dem Schlachtfelde und die Bakterienarretierung. W. von Oettingen.
47 Suture of Palate.—Gaumennaht. J. Dollinger (Budapest).
48 (No. 14.) *Zur Technik der Rückenmarks-Analgesie (spinal analgesia). Hackenbruch (Wiesbaden).

42. **Passive Congestion as Postoperative Measure.**—Kaefer states that he gave Bier's artificial hyperemia a thorough trial soon after it was first announced, and was early convinced of its great value. He has used it now in more than 150 cases and always with increasing satisfaction. He makes a practice of applying the passive congestion after operations when the slightest indications develop suggesting the possibility that healing may not be by primary intention. The prompt application of the constricting band or of the suction cup is invariably followed by the subsidence of symptoms of irritation when the wounds are in tissues that had not suppurated before the operation. In the frequent operations for crushed fingers of factory operatives, the wounds are much soiled, but they heal by primary intention when passive congestion is energetically applied.

44. **Operating Table.**—De Quervain expresses surprise that in all the countless operating tables of which he knows no

provision has ever been made to take advantage of the peculiarly favorable conditions for abdominal surgery which are offered when the spine is bent over backward, the lumbar vertebræ in lordosis, and the hip joints in hyperextension. He gives illustrations of an operating table constructed to bring out these points. He has found it a great help in operating.

45. **Passive Congestion for Fractures.**—Deutschlaender is much pleased with the results of the application of Bier's artificial hyperemia in the treatment of fractures. It is, he states, simple and easy and materially shortens the entire process of the healing of the fracture. The callus forms much more rapidly, and, as the painfulness is very much diminished by the passive congestion, functional use of the parts can be commenced much earlier and be much more extensive than under ordinary conditions; this also prevents atrophy after a fracture. The ordinary methods of treating fracture did not aim to promote directly the healing process, until massage was introduced into the treatment. Massage is merely a mild method of inducing hyperemia; the same purpose is accomplished much more easily and effectually by the artificially induced hyperemia according to the method of Bier.

46. **Dressings for Wounds.**—Oettingen had charge of a Red Cross relief corps during the war in Manchuria and made extensive use of a kind of varnish for dressing wounds. He thinks that the chief aims of a dressing should be to carry off the bacteria in the wound by sucking them into an absorbent material and to prevent other bacteria from getting into the wound. He never washed, shaved nor disinfected the surroundings of the wound, but applied this varnish with a brush all around it. A pad of cotton was then laid over this, and it stuck at once immovably to the varnish. The bacteria in the skin around the wound were arrested by the varnish and could not get into the wound. The simplicity, cheapness and rapidity of this technic commend it, he believes, for general adoption. The results surpassed his anticipations. The varnish is applied with a brush suspended from the stopper of the varnish can, and the pads of cotton are provided in separate parchment wrappers so arranged that they are handled only on the outside. The fingers do not come in contact with the wound in any way. The formula for his varnish is: Mastic 20 parts, with chloroform 50 parts, and 20 drops of linseed oil. A more convenient formula is a heaping tablespoonful of mastic with 3 tablespoonfuls of chloroform and 20 drops of any oil. This varnish will be found excellent whenever it is desired to make dressings, flannel and bandages adhere to the skin.

48. **Technic of Spinal Analgesia.**—Hackenbruch advocates making a small incision before attempting to insert the needle for lumbar puncture and analgesia. This renders the procedure very much easier, while the minute hemorrhage from the incision, 0.5 cm. long, washes out any germs that might be introduced by the needle and also the last traces of the antiseptic used in disinfecting the field.

Centralblatt f. Gynäkologie, Leipsic.

Last indexed, page 1062.

49 (XXX, No. 10). 2 Fälle rascher Entbindung mit meiner Methode (rapid delivery with instrumental dilation). L. M. Bossi (Genoa).
50 Zur Eklampsie ohne Anfälle (without convulsions). Esch.
51. Fall von Sectio caesarea in agone. R. Lumpe. Id. W. Nacke.
52 Ein im Privat-Hause ausgeführter vaginale Sectio caesarea bei Eklampsie. Uthmoeller.
53 *Der Magnet als diagnostisches Hilfsmittel und Heilmittel in der Gynaekologie. H. Sellheim.
54 Ein verkalktes Fibrom des Septum recto-vaginale als Geburts-Hindernis (calcified fibroma obstructing delivery). V. Rubeska.
55 (No. 12.) Models of Four Sections of the Pelvis to Demonstrate the Normal Topographic Relations of the Pelvic Connective Tissue.—Modelle von vier Beckenschnitten, etc. W. A. Freund and A. v. Rosthorn.
56 Zur subkutanen Pubiotomie. M. Reeb.
57 Zur Indikation und Technik der Pubiotomie. K. Reiffenscheid.
58 *Versuch mit dem Bier'schen Verfahren bei Endometritis chronica (trial of passive congestion). F. Turan.
59 (No. 13.) Fall von Ureterocysto-Neostomie. C. Hein (St. Petersburg).
60 *Ueber die Gefahren der Atmokausis und Zestokausis (dangers). L. Pincus.
61 *Rubber Tube for Breech Extraction.—Ein neues Hilfsmittel bei der Extraktion am Steiss. O. Wienskowits.
62 (No. 14.) Fall von puerperalem Tetanus nach Abort. P. Seegert.
63 *Postoperativer Tetanus. E. Martin.
64 Extraktion des in partu abgerissenen und in der Uterus-Höhle zurückgelassenen Kopfes (extraction of detached head). H. Rotter (Budapest).

53. **The Magnet as a Diagnostic and Therapeutic Measure in Gynecology.**—Sellheim comments on the diagnostic value of the information derived from the movements of the uterus. He has been studying the movements of the uterus under the influence of a powerful magnet applied outside, with a large soft iron catheter introduced inside the uterus. The iron inside the uterus follows the movements of the magnet outside, and the organ thus changes its position at the will of the examiner. The procedure is not more difficult or serious than the introduction of any ordinary sound into the uterus. The rod has a projecting rim which prevents its slipping in too far; it is a little more than two inches long by nearly half an inch in diameter. The large electromagnet is mounted vertically on a standard with a horizontal rod and weight to balance it, so that it can be adjusted and moved around readily. The physician palpates with his right hand through the abdominal walls while with his left he explores simultaneously the rectum and vagina. The tip of the intrauterine rod is kept pointed toward the center of the magnet, thus utilizing the maximum of attraction. The force is sufficient to straighten the retroflexed uterus with no danger of by-effects. It is particularly useful as a means of familiarizing the novice with the uterus, giving the organ into his hands, as it were, for him to study. It is also useful as a means of mobilizing the uterus and preventing the development of adhesions after inflammatory processes and displacements. The alternate lifting and dropping of the uterus can also be utilized as a kind of massage. The moral effect on the patients is also an important factor, as they can feel the displaced organ return to its normal place under the mysterious influence of the magnet. The details of the technic are illustrated.

58. **Passive Congestion in Treatment of Chronic Endometritis.**—Turan gives an illustration of an instrument which he has devised for the purpose of applying suction to the lining of the uterus, according to Bier's technic. It is like a large uterine catheter with four wide slits, 3 cm. long, near the tip. A tube is applied to the outer end, connected with a suction pump. He has applied this method of treatment in 4 cases of chronic endometritis in sterile women. Their affection had lasted for from four to twelve years, and various other methods of treatment had given no permanent relief. He applied the suction on alternate days, for from five to twenty minutes at a time, repeating about twenty-one times. The discharge became less after the first sittings, and grew constantly less until it became minimal. The subjective disturbances subsided also, and the improvement obtained has persisted to date. He practices at Franzenbad and the patients were taking at the same time the regular course of bath treatment there.

60. **Dangers of Application of Superheated Air and of Steam to the Interior of the Uterus.**—Pincus states that an exact diagnosis, exact indications and exact technic are necessary to avoid dangers from atmocausis and zestocausis. Properly done, under proper conditions, the procedure is harmless, painless and effectual, but it should never be attempted unless malignant disease can be absolutely excluded. He preaches that total extirpation of the uterus on account of uncomplicated bleeding is unjustifiable unless atmocausis has been given a thorough trial. He advises it as an adjuvant to curettement, allowing an interval of about seven days to elapse between. The cavity of the uterus must be entirely free from relics of tumor, ovum, placenta, etc., and also of clots, mucus and fluids, with the mucosa anemic. The interior can be prepared for atmocausis with hydrogen dioxid and suprarenal extract. Stenosis or atresia or unintentional obliteration do not belong to correct atmocausis or zestocausis any more than a perforation is a part of correct curettement.

61. **Aid in Delivery with Breech Presentation.**—Wienskowitz uses a rubber tube to slip over the thigh of the child to aid in its extraction. It is easily pushed in and works its way around the thigh and out again without injury to the child or mother. Gentle traction is spread over a large surface and has an

astonishing effect in facilitating delivery. The rubber tubing he uses is strengthened with some linen fibers woven in it.

63. **Postoperative Tetanus.**—Martin reports a case of fatal tetanus developing after an operation in the Greifswald gynecologic clinic. It had been undertaken on account of perimetritis, endometritis, rupture of cervix and prolapse of the vagina. The first symptoms of the tetanus were observed five days afterward, proving rapidly fatal. Tetanus germs were cultivated from the secretions of the vagina and uterus. Secretions from vagina and uterus of a large number of other patients were tested at the time for tetanus germs, but none was found.

Deutsches Archiv f. klinische Medizin, Leipsic.

Last indexed, page 1563.

65 (LXXXVI, Nos. 4-5.) *Ueber eine typische Erkrankung des verlängerten Markes (of medulla oblongata). L. R. Müller.
66 *Formation of Lactic Acid in Case of Cancer of Stomach.—Milchsäurebildung bei Magenkrebs. K. Sick.
67 Ueber Atropin-Eumydrin-Wirkung bei Magendarmerkrankungen (in gastrointestinal affections). Hagen.
68 *Experimentelle-Untersuchungen ueber die Tuberkulin-Reaktion. H. Bahrdt.
69 Zur Pathogenese des Streptococcus mucosus. M. Otten.
70 Ueber Infusorien im Typhus-Stuhl nebst Beschreibung einer bisher noch nicht beobachteten Art (Balantidium giganteum). P. Krause.
71 Zur Lehre von der Adams-Stokes'schen Krankheit. W. Leuchtweis.
72 Ueber Dissoziation von Vorhof- und Kammer-Rhythmus (of auricle and ventricle). R. Finkelnburg.
73 Ueber die Abhängigkeit der Wirkung der fluorescierenden Stoffe von ihrer Konzentration (dependence of fluorescent action on concentration). A. Jodlbauer and H. v. Tappeiner.
74 Ueber die photochemischen Wirkung der Stoffe der Fluorescein-Reihe zu ihrer Fluorescenz-Helligkeit und ihrer Licht-Empfindlichkeit. H. v. Tappeiner.
75 *Zur Klinik der umschriebenen Entzündungen des Dickdarms und seines Peritoneums (circumscribed inflammation of large intestine, etc.) A. Bittorf.
76 Changes in Shape of Heart Muscle Nuclei-Formveränderungen der Herzmuskelkerne. E. Forster.
77 (No. 6.) Studies of Metabolism of Albumin.—Ueber den zeitlichen Ablauf der Eiweisszersetzung im tierischen Organismus. W. Falta (His' clinic, Basle).
78 *Ueber die Behandlung der Angina pectoris und verwandter Zustände durch Heil-Gymnastik und Massage des Thorax. K. Hasebroek.
79 Albuminoids in Albuminous Urine.—Eiweisskörper des eiweisshaltigen Harns. O. Gross.
80 *Fall von Morbus Addisonii infolge entzündlich-hyperplastischer Wucherung beider-Nebennieren auf traumatischer Grundlage. R. Börrmann.

65. **Typical Affection of Medulla Oblongata.**—Müller's patient was a man of 46 who used alcohol and tobacco freely and worked constantly under intellectual strain; he had suffered for ten years with paroxysmal headaches and brief attacks of vertigo. After a severe headache of several days' duration, ataxia of the right arm and right leg developed, with crossed sensory disturbances, and right paralysis of the vocal cords. The mind was not affected. The patient succumbed not long after to aspiration pneumonia. The autopsy revealed considerable arteriosclerosis and thrombosis of the right vertebral artery from the first cervical segment to its junction with the basilar artery. The consequence was a focus of softening running through the right half of the medulla oblongata. Crossed hemianalgesia can thus be produced by a narrowly circumscribed lesion in the medulla oblongata, and always indicates a bulbar affection. The parts affected are those which remain intact in case of glosso-labial paralysis.

66. **Lactic Acid Formation in Gastric Cancer.**—Sick has been investigating 34 cases of cancer of the stomach in which the diagnosis was dubious. He summarizes the conclusions of his findings in the statement that the long lactic-acid bacilli do not flourish in the stomach unless there is a more or less complete lack of free hydrochloric acid in the gastric juice. Disturbances in the motor function also favor their proliferation, but the most important factor for their growth and for lactic acid fermentation is the product of the autodigestion (autolysis) of a cancer, that is, the soluble albuminoids produced by the cancer. The long bacilli are found in patients with lacking or insufficient acidity, and even in the mouths of healthy persons, but they never flourish so luxuriantly as in case of an ulcerating cancer. If there is very little albumin in the stomach, or if it has been coagulated by boiling, very little lactic acid is formed; the volatile fat acids predominate. Addition of albuminoids in the form of extracts of carcinoma or of the thymus or other organ particularly rich in cells, is followed by a rapid increase in the production of acids, with the ether-soluble acids predominating, especially lactic acid. This action of the tissue extracts on the metabolism of the bacteria is probably a fermentative action. The determination of the volatile fat acids is, therefore, not so decisive as the evidence of lactic acid.

68. **Study of Tuberculin Reaction.**—Bahrdt writes from Marburg to describe some of the points learned in regard to the experimental tuberculin reaction in the course of von Behring's researches. The most important, perhaps, is the fact that a progressive tuberculosis of moderate virulence in a guinea-pig is paralleled by a progressively increasing susceptibility to the action of tuberculin.

75. **Circumscribed Inflammation of Large Intestine and Its Peritoneum.**—Bittorf called attention some time ago to acute inflammation of the sigmoid flexure, and later experience has confirmed his statements. He has now had occasion to observe 20 such cases, including 3 or 4 with exudation. In 23 cases of pericolitis, 19 were accompanied by exudation, which is much more common when the colon is involved. He gives here a number of histories to show the varying syndromes in case of circumscribed inflammation of the large intestine and its peritoneum. Stomach symptoms may predominate and be the only subjective ones. In one case, a scrofulous boy of 7 exhibited a typical epileptic seizure, his first and last. Extremely painful resistance was found in the region of the sigmoid flexure. Bittorf regards the case as one of true epilepsy. The transient intoxication from the inflammatory intestinal process induced a condition of the brain similar to that which is assumed to be the foundation for epilepsy. In another case there were icterus, cramps in the calves, and enlargement of the spleen, with the characteristic tumefaction and sensitiveness of the region of the sigmoid flexure. The enlargement of the spleen persists in the cases with a chronic tendency.

78. **Treatment of Angina Pectoris with Swedish Gymnastics and Massage.**—Hasebroek has been treating angina pectoris for years at his Zander Institute in Hamburg. The results have been very gratifying in a number of cases, the frequency and severity of the attacks being evidently much modified. In others the results were negative. Even when the heart and its arteries are not intact the exercises were liable to improve the condition, restoring the pulse to normal and the patient feeling generally very much better. He remarks that the mechanical treatment of the circulatory system is still in the empiric phase, both in practice and in theory. The gathering of material is the main point now. The advantages of mechanical gymnastics are being appreciated more and more; especially in angina pectoris they have proved most valuable adjuvants. His experience has demonstrated that the cases amenable to this treatment are those in which the trouble is probably a sensory reflex neurosis. This can be determined by the discovery of a pronounced sensitiveness to pressure on palpating the left thorax, most intense in the region of the apex beat, extending in the interspace from here to the axilla, or else the finding of tender points at some of the emerging points of the intercostal nerves to the left, close to the sternum, between the second and fourth ribs. In the obese, especially in women, there may be a striking sensitiveness to pressure in the left mamma or its base while the right side is free from this tenderness. The presence of these tender points renders plausible the assumption that the attack of angina pectoris is due to a sensory reflex neurosis. If the sensitiveness of these points can be reduced the angina pectoris will be favorably influenced and possibly the attacks may be banished altogether. The peripheral vasomotor system is acted on, and the blood is drawn to the periphery by suction, not by central propulsion. The effect of the gymnastics is not on the heart directly; it acts on the periphery, outside of the heart. He gives the details of 8 cases showing marked improvement. The patients were men from 43 to 55 years of age, and one woman of 49. He describes also other cases in which remarkable relief was obtained and the general health much improved by the exercises, although when the patients finally succumbed, months afterward, the autopsy disclosed pronounced arteriosclerosis and atheromatosis. He gives the details of these cases to show that there is no immediate danger from the exer-

cises even in these serious conditions. He always noticed that the success of the treatment was marked, both subjectively and objectively, as soon as the pulse was restored to normal and the arterial tension reduced. The exercises do not interfere in any way with simultaneous internal treatment.

80. **Addison's Disease on Traumatic Basis.**—Börrmann reports a case which he had opportunity to observe for four years with the postmortem findings. There was not a trace of anything to suggest either tuberculosis or syphilis. The patient, a man, had fallen on the edge of an open trunk, hitting the region of the right suprarenal. He never quite recovered from the accident, and in the course of a year developed symptoms of Addison's disease, to which he succumbed three years later. Both suprarenals were found transformed into large, hard tumors with necrosis in the center, and no trace of suprarenal substance could be discovered. The solar plexus was mostly included in the tough, fibrous mass forming the tumors. It is the first case on record, he says, of true Addison's disease of unmistakable traumatic origin. The article is illustrated with two colored plates.

Muenchener medizinische Wochenschrift.

81 (LIII, No. 9.) *Das Verhältnis zwischen Spirochæten und den Organen kongenital syphilitischer Kinder. E. Gierke.
82 *Neurologische Beobachtungen und Untersuchungen bei der Rückenmarksanästhesie mittelst Kokain und Stovain (spinal anesthesia). R. Finkelnburg.
83 *Ueber die hohe Mortalität der Perityphlitis während der Gravidität. H. Füth.
84 Die Autolyse in menschlichen fettig degenerierten Organen. Waldvogel.
85 *Die Erfolge der Desaultschen Operation des Kieperhöplen-Empyems (maxillary sinusitis). W. Koellreutter.
86 Ueber isolierte, subkutane Fissuren der langen Röhren-Knochen (of long bones). Giese.
87 Zur welteren Kasulstik der Bauch-Kontusion (of abdomen). A. Riedel.
88 Fatal Benzin Intoxication and Postmortem Findings.—Ueber tödliche innére Benzinvergiftung un insbesondere den Sektionsbefund bei derselben. G. Burgl.
89 Eine neue Inhalations-Vorrichtung. Gernsheimer (Mannheim).
90 Instrument for Threading Needles.—Fingerfreies Einfädeln. J. Hertzka (Beneschau).
91 Behrings Diphtherie-Serum und Homöopathie. R. Stüve.
92 Zur Behandlung des Schweissfusses in der Armee (sweating feet). Fischer.
93 Die Pest auf Madeira. J. Goldschmidt.

81. **The Treponema Pallidum and Congenital Syphilis.**—Gierke remarks that the question of the etiologic importance of the treponema has entered a new phase since the positive findings in sections of tissues. The best results were attained with the Cajal stain for axis cylinders: Saturation with a 1.5 per cent. solution of silver nitrate for three days in the incubator at 38 C.; then rinsing several times briefly with water and placing for forty-eight hours in a mixture of 4 parts pyrogallic acid, 5 parts formol and distilled water to 100 parts in a brown vial; after brief rinsing, then dehydration in alcohol, then xylol and celloidin or paraffin imbedding. Gierke reports his various positive findings in 11 cases of congenital syphilis. He obtained positive findings in tissues that had been preserved for years, especially those kept in formol. His findings also prove that the treponema long resists the effects of maceration.

82. **Neurologic Study of Spinal Anesthesia.**—Finkelnburg regards the present technic of lumbar analgesia as a great improvement over the first methods. Cocain spares the tracts which serve for reflex action, while these are affected first and most prominently by stovain. With stovain the tendon reflexes first feel the effects of the drug and are the last to recover, while the effect on the sensory and motor tracts is felt last and is the first to pass away. This different action of cocain and of stovain on the tendon reflexes demonstrates anew that these differ from other nerve tracts. They are evidently more sensitive to mechanical and toxic influences. Individual variations seem to play a subordinate rôle, although the period of extinction of the reflexes may vary in length, probably from differences in the circulation of the cerebrospinal fluid, as it takes a longer or shorter time to wash away the drug from the nerve elements.

83. **Appendicitis During Pregnancy.**—Füth states that out of 42 cases on record 22 of the women died, a mortality of 52.3 per cent. He ascribes the gravity of appendicitis during pregnancy to the displacement of the cecum by the enlarging uterus, bringing the appendix close to the liver or uterus. In the cases on record, 10 of the patients were in the second or third month of the pregnancy and 3 died; of the 32 cases in which the pregnancy was in the fourth to the ninth month, 19 of the patients died. Out of the total 42 cases, an operation was undertaken in 37, and in 4 it was done within forty-eight hours of the first symptoms. In only one instance in this last group the pregnancy proceeded undisturbed and the patient recovered. Abortion and death ensued in all the others. The abortion possibly may have rendered conditions more serious. If the tendency to abortion in these cases can be controlled with opium or other measures, it may be possible to save more of the patients with appendicitis occurring during pregnancy.

85. **The Desault Operation for Maxillary Sinusitis.**—Koellroetter expatiates on the superior simplicity and convenience of the Desault technic. It is the only one, he states, that allows adequate after-treatment and absolute restitution of the relations between the sinus and the nose and mouth. The main point is careful after treatment.

Grèce Médicale, Syra, Greece.
Last indexed, XLIV, page 1571.

94 (VI, Nos. 7-10.) *Prophylaxie des fièvres palustres. J. P. Cardamatis.
94 (VI, Nos. 7-10.) *Prophylaxie des fièvres palustres. J. P. rhée. A. Gloumoucopoulos.
96 Histoire de la médecine. C. Smyrniotis.
97 (Nos. 15-20.) *De quelques types de fièvres dites paludéenes sans plasmodies (malarial fevers without plasmodia). T. Triantaphyllides.
98 (Nos. 31-24.) *Etude de la scarlatine et de l'éruption scarlatineuse. N. G. Macrides.
99 (VII, Nos. 1-9.) *Le paludisme et les cardiopathies. T. Triantaphyllides.

94. **Prophylaxis of Malarial Fevers.**—The professor of hygiene and bacteriology at Athens, C. Savas, has written a book of instructions in regard to the protection of individuals and communities against malaria. The Grecian government has adopted the work officially and had thousands of copies distributed gratuitously to physicians and others. The work quotes freely from similar pamphlets issued by the Italian and other governments, with maps showing the location of the marshes which are so prevalent in Greece. Malarial fevers cause fully one-third of all the internal pathology in the country, estimated at an annual average of about 9,000 cases with 68 deaths to each 100,000 inhabitants. Malaria is more frequent and more destructive in Greece than in Italy. Among 153,158 patients treated in 43 hospitals in Greece during the five years 1893-1899, 61,125 suffered from malaria, and of this number 56,127 cases were of the intermittent and 127 were of the pernicious type, the latter including 113 comatose cases. An absolute immunity has never been observed in Greece, but a brief relative immunity has occasionally been noted. When residing in a hotbed of malaria, Cardamatis never encountered an individual who had entirely escaped malaria infection. In regard to the mosquito host, the *Anopheles superpictus* and the claviger are incriminated. While amply sustaining the mosquito transmission of malaria, Cardamatis asks whether some other factor may not be responsible for the epidemics of malaria which follow extensive turning up of the soil in public works of various kinds. He has frequently had occasion to observe epidemics of this kind at Athens and elsewhere in Greece. Savas preaches the necessity for complete isolation of the malarial patient, asserting further that the complete cure of a single individual who has relapses during the winter is more effectual for prophylaxis than the cure of a hundred persons having their first attacks during the mosquito season. He advises administration of quinin all the time in the severer cases and at the time of the sweat and a little after in the mild cases. He announces that common lime, which is very abundant and cheap in Greece, is an effectual means of killing the larvæ in standing water. Unslaked lime thrown into the water will destroy the larvæ in the water and more promptly still at from 1 to 5 per cent. The lime must be of good quality, thoroughly baked, and the powdered form is better than lumps.

95. **Hydrotherapy for Spermatorrhea.**—Stimulating hydrotherapy should be avoided, but tepid douches along the spine, according to the experience of this writer, will be found useful. They are preceded and followed by a cold douche applied to the front and limbs, carefully avoiding application of cold to the spine. He has cured a number of cases of spermatorrhea by this form of treatment.

97. **Malarial Fevers Without Plasmodia.**—Triantaphyllides has had occasion to observe at Batoum a number of patients who presented apparently the malarial syndrome, but without the malarial parasites in the blood. In a case of this kind the individual had had malaria eighteen years previously. His symptoms were chills, intermittent fever and enlargement of the spleen. No plasmodia, however, could be detected in the blood with the most searching examination. He suggests the existence of a "malarial diathesis" as an explanation for such cases. The organism of an individual having suffered once from chronic malaria, responds in a special manner to disturbing causes, autointoxication, etc. This explanation can not apply to the acute cases; they must have some other origin than in paludism, some other infection, possibly telluric also, but of other nature than the plasmodian infection. These fevers occur at any season, usually in the fall or winter. The chill is not very decided, and the fever is not so high as in true malaria. The paroxysms recur generally every day, but without the invariable regularity in recurrence, duration and intensity of true malaria. There may even be two attacks in one day, which is never observed in case of the plasmodian fever. The complexion is not so clay-colored as in true malaria. The attacks may recur for several months and are not influenced by quinin. Dampness seems to be one of the causes of this group of pseudo-malarial fevers. Damp, badly ventilated dwellings or the proximity of a garden or wood with too dense foliage were noted as possible factors in some cases, and change from these surroundings was always followed by a cure. The populace have a tradition that dampness causes malarial fever, but this fever is not always malarial. He cites 9 cases in which the fever assumed a subcontinuous or remittent type. The abrupt invasion, the general phenomena accompanying the marked enlargement of the spleen, the cyclic course of the fever, the absence of any localization and of typhoid symptoms and the termination with a crisis on the seventh or eighth day differentiate it from the diseases with which it might be confounded. He has no suggestion to make as to what the infection can be, only that it is not malaria. Children are most frequently affected. Malarial antecedents were noted in only about half the cases. Besides these two groups he has also had opportunity to study other forms of what was apparently malaria, but without plasmodia. The fever in some cases was simple remittent, in others remittent followed by intermittent, and in others remittent accompanied by congestion of the lungs. Quinin does little good in these cases. He is convinced that a great many affections are now being erroneously classed with malaria which have nothing in common with it.

98. **Treatment of Scarlet Fever.**—Macrides affirms that the essence of scarlet fever is the more or less complete suppression of the functions of the sweat glands, thus causing serious autointoxication by the lack of the sweat secretion and of normal elimination of waste matters by this route. In measles the prognosis is better the more marked the rash, but in scarlet fever, the reverse applies; the more extensive the eruption the severer the case. The skin feels dry and parched; the skin in measles is always more or less moist, even in the patches of rash. The scarlet-fever rash is more like a burn and feels as if varnished. The redder the skin, the graver the infection, the higher the temperature, the more serious the prognosis. The kidneys seem to be unable to act vicariously, and the amount of urine is rather below than above the normal limit. Treatment should aim to promote diuresis and attenuate the toxic-infection. The disease is self-limited and drugs are useless, if not absolutely harmful, as they are liable to hamper the kidney functioning. Instead of striving to promote the eruption, treatment should be with simple tepid baths, progressively cooled, and injections of artificial serum. Antidiphtheritic serum is not indicated and may do harm, as it has a tendency to interfere with kidney functioning. Caffein citrate might possibly be used as a tonic for the heart and to promote diuresis, but all other measures except tepid baths and artificial serum should be avoided.

99. **Malaria and Heart Affections.**—Triantaphyllides has observed 68 patients who exhibited symptoms of some heart affection during or immediately after malarial infection or later. The patients were between the ages of 7 and 40; he excludes from this list all cases of heart affections noted with concomitant malarial nephritis or cirrhosis, as also all patients who were addicted to alcohol and all in whom the heart affection subsided with the malarial infection. These 68 patients were encountered among 12,000 malarial subjects in his practice at Batoum. They form about a third of all his cases of heart affections in general. In 24 the cardiopathy was evidently the relics of a long preceding malarial infection; in others it developed during or immediately after the paludism and pursued an independent course. The heart affection in both of these groups did not present any specific symptoms, but it was evidently the work of the malarial infection, although the plasmodia had vanished from the blood and antimalarial treatment was useless. The assumption that, besides the action of its toxins, the malarial infection may have a direct, specific effect on the heart is corroborated by the other cases observed in which the cardiopathy developed during the attack of malaria and without any other appreciable predisposing or determining cause. In these cases the heart affection ran a course parallel to that of the malaria and yielded with it to quinin after resisting all the usual heart measures. In the majority of such cases the cardiopathy became installed during a recurrence of the malarial infection. The left myocardium and endocardium were most frequently affected. He gives the details of a number of his cases.

Books Received

Acknowledgment of all books received will be made in this column and this will be deemed by us a full equivalent to those sending them. A selection from these volumes will be made for review, as dictated by their merits, or in the interests of our readers.

CARBOHYDRATE METABOLISM (A Course of Advanced Lectures in Physiology delivered at the University of London, May, 1905), with an Appendix on the Assimilation of Carbohydrate into Proteid and Fat, Followed by the Fundamental Principles, and the Treatment of Diabetes Dialectically Discussed by F. W. Pavy, LL.D., F.R.S., Honorary Physician to King Edward VII Hospital; Consulting Physician to Guy's Hospital. Cloth. Pp. 131. Price, $2.40. Philadelphia: P. Blakiston's Son & Co., 1906.

LEPROSY AND FISH-EATING. A Statement of Facts and Explanations. By J. Hutchinson, F.R.S., and F.R.C.S., LL.D., Glasgow, Edinburgh, Cambridge and Oxford, Etc., Formerly President of the Royal College of Surgeons. Cloth. Pp. 420. Price, $3.25 net. London: Archibald Constable & Co., Ld.; Chicago: W. T. Keener & Co., 1906.

PATHOLOGY, GENERAL AND SPECIAL, for Students of Medicine. By R. T. Hewlett, M.D., M.R.C.P., D. P. H., Professor of General Pathology and Bacteriology in King's College, London; Lecturer on Bacteriology, London School of Tropical Medicine, Etc. Cloth. Pp. 540. Price, $3.25. Philadelphia: P. Blakiston's Son & Co., 1906.

PERJURY FOR PAY. An Exposé of the Methods and Criminal Cunning of the Modern Malingerer. By W. P. King, M.D., Ex-Assistant Chief Surgeon of the Missouri Pacific Railway System. Author of "Stories of a Country Doctor." Cloth. Pp. 312. Price, $2.00. Kansas City, Mo.: The Burton Company, 1906.

BULLETIN OF THE UNIVERSITY OF WISCONSIN, No. 115. Science Series, Vol. III, No. 4. Anatomy in America. By C. R. Bardeen, Professor of Anatomy in the University of Wisconsin. Paper. Pp. 205. Price, 50c. Madison, Wisconsin: September, 1905.

EDUCATIONAL PAMPHLET No. I. The Young Man's Problem. By a Member of the American Society of Sanitary and Moral Prophylaxis. Indorsed and Recommended for Publication by the Executive Committee. Paper. Pp. 24. Price, 10c. a copy. Dr. E. L. Keyes, Jr., Secretary, 109, E. 34th St., New York.

AN ESSAY ON THE GENERAL PRINCIPLES OF THE TREATMENT OF SPINAL CURVATURES. By H. Bigg, F.R.C.S., Ed. Illustrated by the Author's Photographs and Sketches. Cloth. Pp. 240. Price, $2.00. Philadelphia: P. Blakiston's Son & Co., 1905.

X-RAYS IN GENERAL PRACTICE. By A. E. Walter, Captain I. M. S., Superintendent of the X-Ray Institute of India. Cloth. Pp. 174. New York: John Lane Company. 1906.

THIRTY-SECOND ANNUAL REPORT OF THE MATERNITY HOSPITAL, 734 South Tenth Street, Philadelphia, 1905. Paper. Pp. 20. Philadelphia: Patterson & White Company.

THE JOHN CREERAR LIBRARY, Eleventh Annual Report for the Year 1905. Paper. Pp. 57. Chicago: Printed by Order of the Board of Trustees, 1906.